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THE
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RHIINOLOGY, AND OTOTOLOGY;

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RELATING TO

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THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

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THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

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THE JUBILEE OF PROF. POLITZER'S GRADUATION.

PROF. Politzer is so well known to us in person, in reputation, and in literature, that we have only to inform our readers of the interesting festival in his honour which has been held at Vienna, in celebration of the fiftieth anniversary of his graduation as Doctor of Medicine, to awaken their warmest good wishes for his health and happiness in the years before him. Those who have recently met him can vouch for his exceptional physical, intellectual, and social vigour, and his many friends, knowing that his happiness lies in scientific and artistic activity, will echo the congratulations offered him by the Otological Section of the Royal Society of Medicine. These were embodied in an illuminated address signed by the President and Secretaries on behalf of the Members and conveyed by hand by Mr. Arthur Cheatle, who, as their delegate, made a special journey to Vienna for the purpose. This testimony of respect from foreign otologists elicited from Prof. Politzer expressions of the liveliest satisfaction.

LATENT INFECTIONS OF THE DIPHTHERIA BACILLUS.

BY PATRICK WATSON WILLIAMS, M.D.LOND.,

Lecturer on Diseases of the Nose and Throat at the University of Bristol; and in charge of the Ear, Nose and Throat Departments, Bristol Royal Infirmary.

IN introducing the discussion on latent infections of the diphtheria bacillus from the clinical standpoint alone, one is confronted with the difficulty that such infections are devoid of any striking or characteristic clinical manifestations, and that at best we have to depend on the aid of the bacteriologist to confirm or refute a suspicion that any given case is one of latent diphtheria.

I propose therefore to direct attention to various clinical phases of latent diphtheritic infection, giving concrete examples, where it appears desirable, but without discussing the bacteriology of such cases or the administrative measures required for dealing with them—questions in which we may look for expert guidance to those who follow me.

If diphtheria may be defined as any pathological condition, local or general, due to infection by specific diphtheria organisms, diphtheria is "latent" when such pathological conditions are unaccompanied by obvious illness or by symptoms sufficiently characteristic to be recognisable as those of diphtheria.

From the clinical standpoint cases of latent diphtheria may be grouped under three heads:

(A) *Patients who afford none of the usual clinical indications of diphtheria, are not definitely ill, and yet are found to be anæmic, or have increased pulse-frequency, are simply poorly in association with nasal catarrh, membranous rhinitis, faucial redness or slight subacute tonsillitis, otorrhœa, sores, etc., which on bacteriological examination prove to be diphtheritic.*

Of such cases I present two examples.

(1) G. B.—, aged two days, prematurely born (about seven and a half months' gestation), was admitted with her mother to the Bristol Royal Infirmary, weight $4\frac{1}{2}$ lb., yellow and wizened.

About December 24 it was noticed she had some nasal discharge, and as it did not clear up I saw her on January of this year and took it to be simple rhinitis. February 6 cultures were made from the nasal discharge, that is, after it had persisted for six weeks, and then more as a matter of interest than because it was thought to suggest diphtheria, which, however, it proved to be. The child died very shortly after. It was a very good example of latent diphtheria, for no symptom pointed to the true nature of the case.

There is no evidence of any sore throat, and as the child was only four months old I confess my inspection of the nasal passages was not satisfactory.

A case of primary nasal diphtheria is reported by Kuhn¹ in a baby aged two weeks, probably contracted from the maternal genitals in parturition.

(2) Mrs. V. O——, a lady whom I had been attending for her nose for a long time for asthma and accessory sinus suppuration, on March 29, 1909, mentioned that her throat was uncomfortable. On the left tonsil was a small pocket with some exudation from one or two crypts, and the area of tonsil around was a little reddened. She said she had several times had the same before, as a child and since, but I took a swab which Prof. Walker Hall examined by culture and reported on the 31st as yielding "an almost pure growth of organisms presenting the chief morphological characters of Klebs-Loeffler bacilli, but showing a number of atypical forms." As the patient had no symptoms I had contented myself with local antiseptic applications, but on seeing the slide with many typical beaded bacilli of medium length I gave 10,000 units of antitoxin. Meanwhile a girl aged twelve, who had come to stay with her and who had a slight nasal catarrh, was examined, and although I could find nothing abnormal except a little increased redness and fulness of the nasal mucosa, like slight hypertrophic rhinitis, and she was very well indeed, I had cultures made from the nose and throat, and Dr. Russell, the city bacteriologist, found typical diphtheria organisms (Wesbrook C₃) in the nose-swab. The child had had regular diphtheria a few years before. As she seemed to have a cold on her arrival, two or three days before Mrs. V. O——'s sore throat, Mrs. V. O—— had refused to kiss her, but the child declared she would give her one hundred kisses, and was lavish in her embraces.

April 1, the day after the antitoxin injection, Mrs. V. O——'s throat appeared practically normal, except a little localised redness of the tonsil; but several times cultures were taken subsequently. On two occasions Dr. Russell found typical Klebs-Loeffler bacilli (A₁ C C₁ D D₁ D₂). Her health was affected to the extent of being worried and sleepless and her heart's action weakly, with a pulse of 110 when up. But this was in part accounted for by her chronic nasal trouble.

Shortly after this she motored off to her country house, and

¹ A.E.H., Bd. 4, bis 1, Heft 3; JOURN. OF LARYNGOL., RHINOL. AND OTOL., February, 1909.

was under the care of her own medical attendant there. Cultures from throat swabbings taken April 27, submitted to the Laboratory of Pathology, New Cavendish St., London, were reported by Dr. Eastes as follows: "Swab from left tonsil, fairly numerous Klebs-Loeffler bacilli; swab from right tonsil, culture contaminated with large bacillus of *subtilis* type which obscures all other growths."

Meanwhile, however, former cultures were being tested for virulence by Professor Hewlett, and one culture (made April 4) was reported to be "practically non-virulent," and a second culture which gave ordinary barred and beaded diphtheritic organisms was purified by subculturing, and Prof. Hewlett reported that "the result of inoculation is that .5 c.c. of a forty-eight-hour broth culture killed a 300 gm. guinea-pig within forty-eight hours, so that the organism is at least of fair average virulence."

By this time the patient had motored back again and for the greater part of the time had been getting about. She was free from organisms in throat or nose (two separate cultures) by May 27.

The little girl, who was always in excellent health and spirits, soon lost all organisms from the nose after the use of antiseptic sprayings; whether these will reappear I cannot say.

Summary of Case I. O.—March 29, 1909: Tonsillar crypt exudation. No illness. Klebs-Loeffler bacilli beaded (W. Hall). 10,000 units antitoxin serum.

April 1: Tonsil exudation gone. Poorly. Pulse 110.

April 4: *One culture* prepared by W. Hall tested for virulence. *Negative* (Hewlett). Two c.c. of original culture and 2 c.c. of subculture (broth) seventy-two hours. No effect on two small guinea-pigs. *Second culture* containing barred and beaded forms, purified and isolated by Hewlett. *Virulent*. .5 c.c. forty-eight-hour broth killed 300 gm. guinea pigs within forty-eight hours.

April 6: Throat culture. Small growth $A_1 C_1 D_1 C_2 D_2$ positive (Russell).

April 15: Throat culture. Free growth $C D C D_1$. Positive (Russell). Later motored to country residence.

April 28: Culture from *left* tonsil, numerous Klebs-Loeffler bacilli with micrococci. Culture from *right* tonsil, large bacillus of *subtilis* type, obscures all other growths (Eastes and Fletcher).

May 25: Free.

(B) *Cases with local diphtheria lesions, but presenting no general symptoms of ill-health. This class comprises cases that are indisputably "latent."*

I will briefly refer to another Bristol example (reported at greater length in the "Report of M.O.H. Bristol, 1893," "Diseases of Mouth and Nose," p. 139).

A lady had an indefinite sore throat, and three weeks later gave a children's party. Two children who were kissed by her were noticed to have membranous rhinitis, the one eleven days and the other sixteen days after the party, and Dowson and Klein found virulent diphtheria bacilli in cultures from their noses—although apparently in perfect health. After two months' treatment the children were declared free, but after another two months their mother, after kissing them, developed diphtheria, and the children were then again found to have nasal diphtheria.

I may recall, too, the case of pharyngo-keratosis of five months' duration, following an attack of follicular tonsillitis in a school-master, recorded by H. J. Davis (*Proc. Roy. Soc. Med.*, section Laryngology, 1909, vol. ii, No. 7, p. 127). The condition was typical of pharyngo-keratosis in a man in excellent health, though pale. The secretion was swarming with Klebs-Loeffler bacilli. For some months there had been outbreaks of tonsillitis amongst the children of the school; some of these were found to be diphtheria, but with the isolation of the master the outbreaks of sore throat ceased.

Other examples have occurred of virulent diphtheria organisms found in otorrhœa, conjunctivitis, stomatitis, cancerum-oris, external rhinitis (Todd), and in sores on the lips, cheek, finger, vulva, vagina and rectum. Some years ago a boarder at Clifton College had a diphtheritic sore around the orifice of the rectum, which I considered arose from infection from other cases developing in the house. He went home, and a culture by his medical attendant proved negative, nevertheless his sister developed diphtheria.

Cases of purely local diphtheria are of considerable importance, as the few examples I have cited sufficiently prove.

(c) *The third class comprise persons who present no local lesions and no departure from normal health, but in whom diphtheria organisms have been discovered by culture tests, e. g. healthy infected contacts.*

Speaking at Leicester, I stated that it has yet to be shown that such infected contacts are liable to spread diphtheria or are actively infectious till they develop local symptoms. Graham Smith offers a fair criticism when he points out that diphtheria is usually most prevalent at seasons of the year when "colds" are common, consequently a member of this group may at any time,

by developing a "cold," he converted into a member of Group 2; but I do not agree with him when he goes on to state that, "even if Watson Williams' opinion is correct, it is therefore almost as necessary to guard against the possibility of the spread of the disease by members of Group 3 as of Group 2," and for the simple reason that it is impossible to carry out such precautions in practice.

A few of the examples collected by Graham Smith appear *à priori* sufficiently reliable to upset my position, but no contact has been properly examined unless the nasal passages have been explored, and no cultural test for the presence of diphtheria is complete or safe which does not include the nose as well as the throat, and in none of the instances cited by Graham Smith is it stated that the nose was ever investigated.

Cultures from the nasal passages of house-surgeons and nurses who have been in attendance on diphtheritic patients, especially when no precaution is taken to avoid contact of the swab with the vibrissæ of the vestibule, will often show the presence of virulent diphtheria organisms, without any local symptoms or signs. I do not pretend that they cannot, under such conditions, possibly convey diphtheria, for it is proved that diphtheria organisms on clothes or on a cat's fur may infect; but, Mr. President, I may be permitted to refer to your own and Dr. Hewlett's researches, which long ago proved that organisms inhaled and merely coming into contact with the nasal mucosa were quickly removed by natural means in healthy subjects. When the organisms are retained and multiply we have no longer a contact but a local infection, and if no general symptoms arise the case becomes one of "latent diphtheria" on my Group 2.

For the diagnosis of latent diphtheria we have to depend on bacteriology, and notwithstanding the discovery by Davis, Anna Williams, Ruediger, and Hamilton and Horton, of diphtheria-like bacilli which were virulent and yet not neutralised in their pathogenicity by the true diphtheria antitoxin,¹ I suggest that the most practical criterion at our disposal which stamps a case as clinically true diphtheria is a virulence test—morphological tests being unreliable. In support of this statement I relate the following very interesting case:

C. G.—, boy, aged thirteen, a boarder in a house of forty-four

¹ "A Study of the Diphtheria Groups of Organisms," Edusser, "Studies from the Department of Pathology of College of Physicians and Surgeons, Columbia University," xi, 1906-1908.

boys at Clifton College, on November 23, 1905, had a slight sore throat, but was otherwise, then and subsequently, in excellent health. There was no other case of diphtheria in the school. The tonsils were slightly enlarged and abnormally red, but there was no false membrane.

Cultures from the throat yielded a few Klebs-Loeffler bacilli; nose negative. He was sent home under my care. The history of the case was as follows :

November 23, 1905 : Throat few D₁ D₂. Nose negative. (Kent.)

November 28, 1905 : Throat few D₁ D₂. Nose negative. (Kent.)

December 8, 1905 : Throat free growth C D C₁ D₁ D₂. Nose negative. (Kent.)

Virulence test (two weeks from onset), report non-virulent (Kent).

December 30, 1905 : Throat, numerous Klebs-Loeffler bacilli Clinical Research.

Opinion sent to the writer in a letter dated January 1, 1906, from the Clinical Research Association : "You will see from its inspection that the organism present is identical in its morphology with the long variety of Klebs-Loeffler bacilli. We are surprised to hear that inoculation experiments have shown it to be non-virulent, because this type of organism is generally markedly virulent. We are preparing a pure culture of the organisms."

This pure culture was sent without comment to Professor Delepine, who tested it for virulence and reported on January 22 : "The culture has been tested by inoculation. There is no evidence that it is now virulent."

Needless to say, it was not from any lack of confidence in the then Bristol City Bacteriologist that I had sent separate cultures to the Clinical Research Association, but it was of paramount importance to have very strong support in my contention that these virulent-looking organisms were harmless; and it adds greatly to the value of the case that two reliable authorities prepared and reported on the cultures and that two independent tests for virulence proved negative. On my recommendation the boy was received back in school as a boarder, with organisms still in his throat, and without any bad consequences. The only treatment employed was local antiseptics, but that had no appreciable effect.

For further evidence that non-virulent diphtheria bacilli when transferred from one person to another do not become virulent or give rise to disease, I will refer to examples reported by Graham

Smith, Cobbett, and Park and Beebe (*vide* "The Bacteriology of Diphtheria," Nuttall and Graham Smith), and I have myself reported an instance¹ in my practice of a boy who had nasal diphtheria in December, became free, returning to school in February, had further negative cultures taken, yet, four months after his first attack, the nose yielded a positive culture; but no cases of diphtheria arose amongst his fellow-boarders from his return to school and mixing freely with them before the last positive culture was taken. No virulence test was made because the boy had pleurisy and passed out of my hands.

Treatment.—Latent diphtheria being essentially a local diphtheritic infection, one might naturally expect that the application of antiseptics would afford satisfactory results in causing the disappearance of the bacilli, yet, unfortunately, clinical experience leads to the conclusion that, although the infectivity of the patient is diminished while superficial organisms are killed or rendered less virulent while antiseptics are used, the period of infectivity is not shortened, for the organisms will reappear after the antiseptics are left off just as long as they would appear if no antiseptics had been used. The fact is, we cannot get the antiseptic to the organisms which have invaded the superficial layers of the mucosa; and we cannot even apply antiseptics to the deepest pockets of the lymphoid crypts or to the lining surface of the accessory sinuses when the nasal passages are involved. In clinical cases the removal of tonsils may be helpful—a method advocated by Pegler² in 1905—and the same may be said of irrigation of the maxillary antra.

Antitoxic serum probably has some anti-microbial effect, and attempts have been made (L. Martin) to prepare an anti-microbial diphtheria serum and to use it dried, in the form of pastilles, for its local action to decrease the number of living bacilli in the throat. Dr. Davis's case of pharyngo-keratosis received five injections without amelioration, but he has recently written to tell me that after four more large injections absence of diphtheria bacilli to culture tests was shown after several cultures. It seems likely that in a large percentage of cases antitoxin serum injections fail, possibly because the proportion of bactericidal substance varies, and because it is necessary to use larger quantities of the serum than is necessary for antitoxic effects.

Vaccines may be employed. As long ago as 1897 Van de

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., November, 1905.

² *Brit. Med. Journ.*, vol. ii, p. 651, 1905.

Velde¹ used injections of dead bacilli to produce anti-microbic properties in the blood of goats, and L. Martin,² by injecting bacillary bodies into a horse, prepared serum which he stated, when applied locally, caused a rapid decrease in the number of bacilli in the mouth. More recently Petruschy,³ of Dantzig, has used injections of cultures mixed with physiological salt solution (1 to 100) in six cases of chronic latent diphtheria, in every case with favourable result. The injections were from 0.1 cm. to 0.05 cm. of the diluted culture, and varied from one to several injections in the different cases.

In one case that was referred to me, my colleague, Prof. Walker Hall, has been employing vaccines that he prepared himself; the condition showed marked improvement after the injections of vaccines.

I will refer to one other method that is worthy of consideration, viz. cataphoresis: A case of local chronic diphtheria of the ear, resembling in clinical appearance eczema of the external meatus. Dr. Tayler, of Bradford-on-Avon, has been employing cupric ionisation.

Miss D. N——, aged thirty, was referred to me by Dr. Pearse, of Trowbridge, on January 27, 1909, complaining of discharge from the left ear of five months' duration, with acute onset of earache, preceding this purulent discharge. Dr. Pearse had found Klebs-Loeffler bacilli. The left external meatus was almost filled with scaly discharge, and the skin of the concha for half an inch round the meatal orifice was covered with scaly crusts. I found she had well-pronounced chronic atrophic rhinitis, with crusts of inspissated secretion in both nasal passages. She was very dull and apathetic, with slow cerebration, and her hands were cold and doughy and the skin slightly cyanotic. Dr. Pearse had got the ear to clear up, but it always broke down again.

Prof. Walker Hall identified Klebs-Loeffler bacilli in cultures from the meatal discharge.

Dr. Tayler saw her on April 18, 1909, when almost the whole of the left pinna was covered with a thick crust which oozed pus on pressure. Cultures from the pus showed varied flora; Klebs-Loeffler bacilli were present.

¹ "Beiträge zur Kenntniss der Antitoxischen und antiinfectiosen Kraft des anti-diphtherieserums," *Cent. f. Bakt.*, vol. xxii, p. 527; cited by Nuttall and Graham Smith.

² *Loc. cit.*

³ *Arbeiten a. d. Geb. der Patholog. Anatomie*, Bd. 6, Heft 2, 1908.

April 19, ionised with copper, 10 m.a. for ten minutes.

"	27,	"	"	"	10 m.a.	"	"
May	8,	"	"	"	10 m.a.	"	"
June	8,	"	"	"	8 m.a.	"	"

Each time the patient came up for ionisation the case showed distinct improvement, and on the last occasion the greater part of the ulcer had healed and the patient's general condition had become much more satisfactory.

PHARYNX AND LARYNX FOR 1909.

NOONE can read the papers which have been published upon the diseases of the pharynx and larynx without being impressed with the great amount of work which has been done during the past year. There can be no doubt that recent improvements in methods of diagnosis have done much to stimulate effort in the direction of treatment.

The published records of discussions in societies and all the recent text-books give abundant evidence of the earnestness with which the study of the diseases of the nose and throat has been pursued, and this is equally true whether we regard the subject from the standpoint of aetiology or pathology.

One of the most striking features of the reports of the different societies at home and abroad is to be found in the clinical reports of important cases which have received material benefit from the newer methods of diagnosis and treatment. The fact that we are now able to see directly into the cavities is sufficient to show that agents such as X rays and radium may now be efficiently applied to the pharyngeal and laryngeal membranes. Further, within the same cavities operative treatment has advanced enormously, and not only have a large number of foreign bodies been extracted through the normal passages, but portions of the larynx have been removed with comparative ease by internal operation.

Apart from the application of the newer remedies many cases have been recorded showing a steady advance in internal and external operations and the ordinary methods of treatment. There can be no doubt that the different agents or operations employed in the treatment of the more serious affections of the pharynx and larynx are becoming better understood, and consequently a finer appreciation of the relative value of each is being obtained.

For many years now the study of bacteriology has been pursued with very great interest and success. The results obtained in diphtheria both in diagnosis and treatment have naturally led to a more careful investigation of the more acute affections in these regions. In a paper by Dr. J. O. Hollick, Medical Officer of the Midland Counties Idiot Asylum, an interesting outbreak of pharyngitis and tonsillitis of an infectious nature is placed on record. At first it was thought to be due to the Klebs-Loeffler bacillus, but subsequent examination proved the absence of the diphtheria bacilli while many streptococci and staphylococci were found. The infectious nature of the disease, the persistent and clinging properties of the microbes in the organism causing serious mischief to the glands, constitutional diseases and subsequent anæmia, showed, as the writer very properly pointed out, that a streptococcal infection of the throat is not to be treated lightly.

Our readers will remember the interest which was taken in the important paper by Sir Felix Semon upon the pneumococcal sore throat, and many members of the profession are now recognising this type. Further, practitioners, looking back upon their experience, are recalling instances of this affection which have come under their own observation, but which were not recognised nor classified at the time they were seen, consequently his views are largely being confirmed. Not only so, but critical reviews of his work have appeared from time to time. Thus Dr. Sack, of Moscow, considers that these cases belong to a class by themselves which hitherto has not been differentiated from other acute affections. Dr. Ruprecht, of Bremen, considers that the lesion may have been the result of the pneumococcus taking on a pathogenic phase, but considers that as the organisms are often found in a normal throat his view should be received with a certain amount of reserve.

It is clear, therefore, that the whole group of infectious cases of a non-diphtheritic type requires most serious consideration on the part of the profession, and it is gratifying to note that there is distinct evidence in the work of the past year that the problem is being more earnestly studied than at any previous time.

The question of the diagnosis of acute affections of the pharynx and larynx leads naturally to a consideration of prophylaxis and treatment. Few men have any doubt of the value of injections of serum in cases of diphtheria, although widely different opinions have been expressed about the value of sera employed in suppurative affections. Whether sera for the different affections may be ultimately successful or not is a question which may be left to the

physiological chemists who are engaged in their preparation. Meantime, what is of great importance in our special department is the general tendency in medicine at the present moment to investigate the true value of vaccine therapy. This method of treatment has one advantage that is not found in the preparation of the serum, namely, that the organisms found in the individual affected can be cultivated and a vaccine prepared directly from them in a very short space of time. Further, by a virulence test and passing the virus through some of the lower animals an increase in the power of the vaccine may be obtained if necessary. Most writers on the subject are inclined to say that the preparation of the vaccine from individual patients is far more satisfactory than injections of vaccines prepared and sold by the chemists. In many instances the latter have been proved to be useless while a satisfactory vaccine was being prepared from the organisms found in the patient's body. Experience, therefore, is gradually being obtained in the administration of vaccines prepared from the pneumococci, streptococci, staphylococci and other organisms, and in a short time the influence of such work will be largely felt in our special branch of surgery.

The control of the administration of vaccines is advocated by Sir Almroth Wright as an important factor in this work. By taking the opsonic index before and after the administration of the remedy, he maintains that the surgeon is able to say definitely whether he has, or has not, a remedy which has an influence upon the resisting power of the tissues of the affected person. This is not only useful in dosage, but it gives a control which can never be obtained by the mere observation of the results upon the patient. Opinions are divided as to the absolute necessity of taking the opsonic index, largely, no doubt, owing to the trouble involved and to a certain extent the expense incurred. However this may be there can be no question as to the scientific attitude taken up by Sir Almroth Wright. The absence of such a control in the early administration of tuberculin no doubt largely accounted for the unsatisfactory results which were at first obtained by unknown dosage. The more the question is studied the more it becomes evident that the crude methods of administration in vaccine and serum therapy hitherto adopted must be entirely replaced by scientific procedures.

The difficulties in connection with the subject are not lessened by the fact that many organisms are found in the normal conditions and also in the diseased state, so that it is frequently necessary to measure the resistance of a patient to a number of pathogenic

organisms, and in very acute cases, in order to save time, to make use of a mixed vaccine containing two or more organisms.

Lastly, just as in typhoid fever there is a strong probability that certain patients carry these infections into the chronic stage and so have recurring pharyngitis or laryngitis, or even bronchitis, there can be no doubt that during the past year much has been done by way of investigation of the very complex question, or rather, series of complex questions, involved in chronic affections of the throat, and the result cannot but be satisfactory in the end. If it be too much to expect that vaccines can cast out microbial influences which have long remained in the system, still there should be reasonable hope that a patient may have beside him an agent to be employed the moment recurrence takes place, in the hope of modifying the course of the attack.

The discussion which took place at the annual meeting of the British Medical Association this year, upon latent infections due to the presence of the diphtheria bacillus, is of great importance. Dr. Watson Williams very properly emphasised the necessity of examining, even by virulence tests, all cases where the disease might be latent, and the great importance of the subject by way of prophylaxis was emphasised by the able contributions of Drs. R. M. Buchanan, Duncan Forbes, and R. Veitch Clark. The discussion will rank very highly when judged by the standard of an educative influence upon the profession generally.

Malignant disease in the region of the pharynx and larynx has been dealt with somewhat extensively in the papers published during the past year. Professor Chiari, of Vienna, summed up the present position very thoroughly in his contribution upon the treatment of cancer of the larynx at a meeting of the American Laryngological, Rhinological and Otological Society. He first of all referred to the different views held as to the cause of carcinoma, and then to all the methods of treatment of a non-surgical nature, such as serum therapy, Röntgen rays, radium, enzyme treatment with trypsin, amylopsin, and fulguration; but concluded, like all surgeons, that surgical methods alone have proved of value in the treatment of cancer of the larynx. The importance of early recognition of the disease was again emphasised because of the enormous importance of early radical operation. While it is true that in the present state of our knowledge early surgical interference is the great principle to teach, it is only right that every other method should be thoroughly investigated. Many methods, such as Röntgen rays and radium, are not employed in the early

stages because of the risks of failure, and consequently we only know a little so far of their employment in advanced cases of carcinoma in the pharynx and larynx, where their action seems at least to be palliative. It is therefore satisfactory to note that during the past year many workers have been trying these agents, and, thanks to the direct methods of examination, the rays may now also be applied directly. Brünings has constructed a tube suitable for the direct method, so that the anticathode of the Röntgen tube is only .5 centimetres from the diseased surface. The application of radium to the interior of the larynx is also now possible.

The difficulties of treatment in cases of cicatricial stenosis of the larynx is fully appreciated by the profession, and consequently the discussion which took place at the British Medical Association this year was extremely interesting. Those who advocated the methods of MM. Sargnon and Barlatier found that owing to the serious drawbacks of long-continued treatment and painful dressings many surgeons were not inclined to agree with them. A large number of laryngologists will prefer probably in the first instance to persevere with the methods of dilatation by means of suitably modified intubation-tubes worn for the necessary time as recommended by Drs. Bryson Delavan and Mayer.

One of the outstanding features of last year's therapeutics, in this country at least, was the demonstration by Dr. Wickham, of Paris, on radium. It is needless to dwell upon the importance which the French school of surgery attaches to the different action of the rays, their methods of screening and "cross-fire." The question which will cause the greatest difference of opinion will probably be the claim made for a selective power of these rays to destroy diseased cells without injury to the normal tissues. What really takes place may be explained by others in a totally different way, but in any case there can be no doubt of the direct effect of radium in case of radent ulcer in or near the epithelial structures outside the nasal or buccal cavities, or again, in the mucous membrane close to the external parts. So far most cases have been of this kind, but experiments are now being tried by means of the direct method of examination and the results will be awaited with interest. Judging from the improvements or palliations which have been recorded in carcinoma of the œsophagus, it is possible that the same disease in the larynx may yet be successfully attacked.

The armamentarium of the laryngologist has been largely

augmented during the past year by a great variety of different instruments of an improved type. As was pointed out by Dr. Macintyre in his address to the Central London Throat and Ear Hospital a year ago, one thing which has contributed greatly to the improvement in apparatus is the cold and efficient electric surgical lamps which are now being manufactured. An instrument which has caused a considerable amount of attention of late is Hay's electric pharyngoscope. This instrument is constructed upon the principle of the cystoscope, and upon the same lines as the salpingoscope. By its means one can examine the nasopharynx, pharynx and larynx with one introduction of the instrument, sometimes without, and at other times with, a local anæsthetic.

Another region in which we have had improvements in instruments is the hypo-pharynx, a cavity which has only of late received sufficient attention. Many cases that were put down as carcinoma of the œsophagus ought really to have been classified as post-laryngeal.

If it cannot be said that any very great improvement has taken place in the treatment of tubercular affections of the pharynx and larynx, it is not because the subject has not received great attention. The numbers of patients taking advantage of the sanatorium with greater attention to the condition of the larynx and rest to the voice show unquestionably that much has been done of late to relieve pain and prolong life. There is by no means a general consensus of opinion in favour of tuberculin, and a considerable number of observers place on record their disappointment with the results of control by means of the opsonic index. It must be remembered there are differences in observers, so reports from different workers sometimes do not give similar results. It is to be hoped that simpler methods and greater experience may make the test of the opsonic index more reliable, because the administration of tuberculin would be very much more satisfactory were it under a direct control. Suitable doses seem to bring on satisfactory positive phases, but an overdose is apt to cause a very prolonged negative phase which cannot be beneficial to the patient.

It cannot be said in operative surgical treatment of tubercle of the larynx we have much to record in the past year, although a good deal has been written on the subject. Dr. Dundas Grant has reported improvement in tubercular laryngitis from galvanopuncture, and his future experiments in this direction will be watched with interest.

The treatment of specific diseases in the pharynx and larynx has been very fully discussed during the past year, and many surgeons are pointing out that the tertiary lesions, largely preventable, are often caused by neglect of treatment in the earlier stages of the disease. The prolonged administration of the medicines doubtless leads to carelessness on the part of patients thinking the disease has been commanded when the symptoms disappear. A valuable contribution on the subject was made by Dr. Lieven in his introduction to a discussion in the Laryngological Section of the Royal Society of Medicine last year. In the opinion of this authority mercury still remains the most important remedy. While giving full credit to the advantage of internal administration and hypodermic injections, he pointed out that in Germany the majority of the profession prefer treatment by inunction. The importance of iodide as being more useful in tertiary manifestations was emphasised. With regard to the well-known preparations of arsenic which have recently been recommended in the treatment of specific diseases, Dr. Lieven quoted Dr. Neisser in saying that only after twenty years of experience with an enormous number of cases shall we be entitled to say anything about the real therapeutic value of arsenic.

Many other interesting subjects have been discussed during the past year, but sufficient has been said to show that we have reason to be gratified with the sincere work which has been done in the study of affections of the pharynx and larynx.

RETROSPECT OF RHINOLOGY.

THE surgical treatment of suppurative disease of the nasal accessory sinuses has during the past twelve months received a large share of attention, a growing tendency towards intra-nasal methods of operation manifesting itself.

An intra-nasal operation for drainage of the maxillary antrum has been devised by Donelan, special forms of chisels being employed to open its inner or nasal wall. Upon anatomical grounds Donelan advocates removal of the middle and posterior end of the inferior turbinal (and not its anterior end as so commonly advised) in order to secure efficient intra-nasal drainage.

The relation of suppurative disease of the accessory sinuses to diseases of the eye has been the subject of valuable papers by Drs.

Dundas Grant, Logan Turner, George Mackay, C. R. Holmes, H. W. Loeb and others.

The importance of the anatomical relationship of the posterior ethmoidal cells and ethmoidal sinuses to the optic canals has for some time past been insisted upon by Onodi, and is now accepted by all rhinologists. The co-operation of the rhinologist and ophthalmologist in the elucidation of obscure cases of retro-bulbar neuritis is also becoming more and more appreciated by the profession.

The investigations of Prof. Killian upon the origin of the fibro-myxomatous or choanal polypus has had valuable practical bearing upon treatment, the consensus of opinion now favouring opening of the antrum through the canine fossa and removal of the base of the growth with a portion of antral mucosa by avulsion or curettage.

The term "naso-antral polypus" now used by many authors instead of "choanal polypus," indicating as it does more exactly the origin of the growth, is a distinct improvement in nomenclature.

The value of X ray photographs of suspected accessory sinus disease is now fully appreciated, much useful information being forthcoming at times from a careful examination of negatives.

The employment of Kuhn's per-oral intubation instrument for the administration of anæsthetics for certain operations upon the nose and naso-pharynx has proved of great service, not only in permitting of a more effective narcosis, but also in preventing the swallowing of blood, and consequently in making the surgeon's work less hampered than formerly.

Following upon the lines of Pirquet and Calmette, Lafite-Duport and Moliniere advocate a "rhino-reaction" for tuberculosis.

The solution employed contains 1 per cent. of dried tuberculin (Calmette). Eight tampons of wool the size of a lentil are soaked in 5 c.c. of the solution and applied to the nasal mucosa, preferably over the septum. A reaction follows in from eighteen to forty-eight hours, indicated by congestion of the mucosa and formation of an exudate at the site of application. This is followed by the development of a thin crust, which separates from the fourth to the sixth day, leaving behind a congested mucosa.

Although opinions still differ as to the best form of operation for the treatment of deflected septa, no doubts are entertained as to the value of securing patency of the nasal passages in all cases of aural and laryngeal disease.

The treatment of atrophic rhinitis by the submucous injection of paraffin (Lake and Brindeb) has been the subject of several favourable reports during the year.

W. M.

RETROSPECT OF OTOTOLOGY, 1909.

IN a general survey of the numerous otological contributions which have appeared in the volume of the *JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY*, just completed, the attention is arrested by three or four prominent items which may be regarded as representative of the general trend and progress of otology during 1909.

One of those items is the discussion upon tinnitus aurium at the Belfast meeting of the British Medical Association, at which Mr. Richard Lake published the most recent results of his treatment of severe tinnitus by ablation of the labyrinth (p. 493). In comparing this operation with that of the division of the auditory nerve, Mr. Lake was able to show from the published results that the former is at once less dangerous to life and more likely to cure the tinnitus. That ablation of the labyrinth for the most intractable and distressing forms of tinnitus, then, will acquire a recognised place in aural surgery is probable, until or unless some soothing internal remedy, with a selective action upon the irritated auditory nerve, is discovered.

Another event of importance during the year was the reading before the Section of Otology of a paper by Mr. C. E. West upon malignant disease of the meatus (pp. 149, 341), based upon a study of eight cases, seven of which were epithelioma and one sarcoma. In order that he might be able to remove the disease thoroughly, Mr. West sought to obtain a sufficient exposure of the diseased area by a displacement of the auricle downwards, and the manoeuvre seemed to fulfil amply the requirements of the case. In several of the patients the complete removal of the cancerous tissue necessitated a deep and extensive dissection; and yet, in spite of the thoroughness with which this was done, recurrence took place in six out of the eight cases. The same subject is also illustrated in the publication of a case by Dr. H. J. Davis (p. 343). Altogether, the reports of these cases, along with the discussions they gave rise to, provide us with a large amount of suggestive information, and at the same time present for our consideration a number of new problems. One of these, the all-important point

of the direction taken by the proliferating cancer-cells, was raised by Mr. West himself, and he expressed his fears that the tendency was for the growth to penetrate towards the pharynx. Another question, with reference to the relative frequency of meatal cancer, was asked by the President, contrasting as he did the comparatively large number of cases personally investigated by Mr. West with the small number he himself could summon from his own considerable experience. The answer to this question is by no means easy to find. Coincidence may account for a close run of rare cases. It is also undeniable that the increase of cancer during recent years may be responsible for a decrease in its rarity in certain regions, such as the external auditory meatus. In any case the papers just mentioned will serve to direct the attention of aurists to this disease, and will lead them to keep a sharp look-out for it, particularly since the results have shown the paramount and urgent necessity of early diagnosis.

The third circumstance that has led to a quickening of interest in our own work is, of course, the stride forward in the knowledge of labyrinth suppuration and its sequelæ consequent upon the striking clinical investigations of Bárány and the successful operations for cure of this disease, of which Professor Jansen, of Berlin, must be considered the pioneer.

In the matter of the pure science, as distinct from the applied science of the labyrinth and its diseases, heretofore perhaps the most neglected, because the least accessible region in the body, we in Britain have just cause for pride, for, as the award of the Lenz prize testifies, the patient and laborious investigations of Dr. Albert Gray into the anatomy and histo-pathology of the internal ear have succeeded in winning the applause of his critical fellow-workers on the Continent. Moreover, those who have been privileged to follow the careful microscopical researches of Mr. Sidney Scott, of which we have recorded examples from time to time, will agree that with these two representative workers we have every reason to look forward with confidence to the future of scientific otology in this country.

Reverting to the clinical examination of the labyrinth and its functions, we note that the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.* for 1909 contains an epitome by the present writer of Bárány's book upon vestibular nystagmus (p. 60), which, it is hoped, will prove a useful guide to a complicated subject, and also a paper by Mr. Sidney Scott upon the problem of vertigo (p. 193), in which, after describing the functions of the vestibular system, he proposes

an ingenious theory in explanation of the mechanism of vestibular nystagmus. The French view of the question will be found in a translation of an article by MM. Moure and Canzard (p. 440) ; and the volume for the year, so largely occupied with the new labyrinthology, terminates with the publication of the writer's paper upon the value of the tests of the functions of the labyrinth in the diagnosis of aural disease (p. 646).

With regard to the pressing questions of when our surgical measures should stop short with the radical mastoid operation, and when we should go on to open up the labyrinth, opinion is gradually assuming definite shape, under the guidance of Professor Politzer, whose views, expressed in the new edition of his textbook, formed the subject of a leader in this JOURNAL early last year.

As might be expected, the literature of 1909 is rich in the number of successful labyrinth operations performed. In this connection we may dwell for a moment upon the reports of the cure of otitic meningitis by operation, which, we are tempted to say, may prove to be the heralds of a new and brighter era in the treatment of this, the most desperate of all the sequelæ of aural suppuration. Perhaps it would be too optimistic to expect that in the future septic meningitis would be dealt with as efficiently and successfully as the still formidable, though no longer hopeless, septic peritonitis. But this is the end to be aimed at, and, if an advance is to be made, otologists surely will lead the van, seeing that their experience of the malady is greater and their opportunities of initiating and testing new methods of treatment are more frequent than those of surgeons in general.

A good start has, indeed, already been made by the Vienna school, as may be seen from the abstract of an article by Alexander which appeared in our November issue (p. 634). Messrs. West and Scott, also, have added to their laurels by their suggestion of draining the infected meningeal spaces by way of the most usual path of infection, the internal meatus.

Infection from the labyrinth may also give rise to cerebellar abscess, as readers of Nenmann's book on the subject are aware, a review of which appeared in the August number (p. 471). Mr. Scott, also, has reported a case in point.

Leaving behind the attractive subject of aural suppuration and its sequelæ, the keenness of our interest is nevertheless still sustained by the accounts by Mr. Macleod Yearsley and others of cases of cerebello-pontine and bulbar tumours. Disturbance of the hearing, as we all know, is not infrequently an early symptom

of tumours in the posterior fossa, and in cases of unilateral perceptive deafness the careful observer will not omit this consideration in forming his judgment upon the cause of the disability.

In the matter of the therapeutics of chronic middle-ear catarrh, and, above all, oto-sclerosis, we look in vain for a sign of improved prospects, in spite of the ingenuity which has furnished us with the ability to apply hot air to the middle ear—a method of treatment commended by Dr. Come Ferran, Dr. Wylie, and others.

Of the rare and unusual cases reported during the year we may mention the following: a case of hairy polypus of the ear, by Dr. E. Urbantschitsch; a double mastoiditis with rupture of the carotid artery and recovery, by Dr. J. A. Stuckey; a curious synovial protrusion into the external meatus, by Mr. R. Lake; and two cases by Dr. G. F. Cott, of the spontaneous discharge of cerebro-spinal fluid from the ear, ascribed in one of them to violent nose-blowing.

We close our brief *resumé* of the year's work in otology with a word of acknowledgment to Dr. J. S. Fraser, of Edinburgh, for his important contribution upon congenital syphilitic deafness. His paper formed the otological section of the annual "reports" of Dr. A. Logan Turner's clinique, and its detailed description of thirty-three cases and analysis of the literature of the subject combine to form a monograph which will prove of great value to all future investigators.

D. M.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Meeting, Friday, December 3, 1909.

DR. DUNDAS GRANT, *President, in the Chair.*

THE following cases and specimens were shown:

CASE OF SECONDARY SPECIFIC PHARYNGITIS IN A YOUNG FEMALE.

BY DR. DUNDAS GRANT.

A young woman, aged twenty-two, was sent to Brompton Hospital as presumably a subject of tuberculosis. When referred

to the exhibitor he was able to agree with the colleague to whom she was sent in his opinion that the condition of the throat was really one of secondary specific nature. On both pillars of the fauces there was superficial ulceration of symmetrical nature, rather higher in colour than a tuberculous lesion would be. It was of about two months' duration, and was more marked on the left side, where apparently it had commenced. In the left submaxillary region there was an enlarged gland, which seemed to indicate that the left tonsil might have been the seat of an accidental primary inoculation. No history was obtainable, and there was complete absence of rash and of post-cervical glandular enlargement. The patient is an exceptionally healthy-looking person. The examination of a scraping from the diseased surface, by Dr. Bryant, revealed the *Spirochaeta pallida*.

Dr. DONELAN said that many of these cases escaped observation altogether.

CASE OF FRONTAL SINUS DISEASE, WITH NECROSIS, IN A MAN
AGED THIRTY-THREE.

By Dr. KELSON.

Patient, a tailor. In 1905 he contracted syphilis. In 1907-8 he attended an eye hospital for defective vision. In December, 1908, he came to the London Throat Hospital with pus in the left nostril, and a radical operation was performed on the left maxillary antrum by Mr. Seccombe Hett. Four days after that great swelling occurred in the frontal region on both sides. Three days later Mr. Hett operated again, when extensive necrosis of the anterior walls of the frontal sinus was found, and large sequestra removed. The case then passed into my care; since then small portions of dead bone have been taken away on several occasions, and a node has appeared on the left side of the mandible.

ULCER ON LEFT ARYTENOID CARTILAGE; ? NATURE.

By Mr. H. BETHAM ROBINSON.

Male, aged sixty-three, with flattish ulcer creeping from the inner side of the arytænoid cartilage on to the posterior part of the cord; on the upper surface of the cord are some heaped-up

granulations over its posterior two thirds, but not involving the free edge, which is sharp and well defined. The cord is generally congested. There is no evidence of infiltration, and mobility is normal. The right cord is not altered. There are no enlarged glands, no pain, no physical signs in the chest, and no bacilli in sputum. In February last he had hoarseness and slight pain. He was sent for an opinion in June, when he was still hoarse, but no other inconvenience; practically there has been little change in the laryngoscopic view since. In July he was operated on for glaucoma. The suggested diagnosis was that it was a senile tuberculous ulceration; the length of duration and treatment seemed to exclude syphilis and carcinoma, apart from the local appearances.

Dr. WATSON WILLIAMS was not surprised that some doubt had been felt regarding the diagnosis. He also favoured that of tuberculosis, but the question was still open.

Mr. DE SANTI had no doubt that it was senile tuberculosis. The duration of the disease, coupled with mobility of the cord and the absence of enlarged glands, were against malignancy.

The PRESIDENT said his opinion coincided with Mr. de Santi's; the peculiar greyness of the floor of the ulcer and the languid purplish colour of the edges were what one often saw in tubercle. It was exceptional in that it was so limited in one part. Possibly the rest of the larynx would later be involved. He reminded Mr. Robinson that several members had often found galvano-caustic treatment successful in similar cases.

Mr. H. BETHAM ROBINSON agreed with the diagnosis of tuberculosis. The patient had been resting the voice with marked benefit.

CHRONIC LARYNGITIS; ? PROLAPSE OF VENTRICLE ON RIGHT SIDE.

By MR. H. BETHAM ROBINSON.

Male, aged twenty-six, came on September 8 with some loss of voice and hoarseness of two months' duration; he had then chronic pharyngitis with catarrh of both vocal cords. On October 10 the swelling over the right cord was first noticed. At the present date there could be seen over the anterior two-thirds of the right cord a red fold, which in shape might be likened to the plica semi-lunaris; this was free from the vocal cord, but was connected with the edge of the ventricular band. The posterior part of the right ventricular band seemed a little more convex than that of the left side. At times the mobility of the right cord appeared a little impaired. Both cords were catarrhal but not ulcerated. No physical signs in the chest.

The PRESIDENT regarded the case as tubercle, but admitted it was open to question.

Dr. DAVIS suggested that what had been called a prolapse of the ventricle was really only a swollen ventricular band.

Dr. TILLEY agreed with Dr. Davis with respect to the so-called prolapse of the ventricle. It looked like a tuberculous larynx, but careful examination by the direct method was required in order to define the limits of the swelling. As far as he had been able to see there seemed to be no prolapse of the ventricle, but only an œdematous enlargement of the anterior part of the right cord.

Dr. HORSFORD remarked that the swelling affected the posterior parts, and that there seemed to be some subglottic œdema—a circumstance which favoured the diagnosis of a general œdema.

Dr. JOBSON HORNE condemned the expression "prolapse of the ventricle," which, he protested, was used too freely. So-called prolapses were usually growths protruding from the ventricle.

The PRESIDENT said he thought the term "prolapse" in this connection was the remains of a tradition which had been handed down. Gouguenheim said the cases of so-called prolapse were generally outgrowths, usually tuberculous, from the ventricle.

Mr. H. BETHAM ROBINSON, in reply, drew attention to the "query" mark before "prolapse," and said he had used the term merely in a descriptive sense.

HOARSENESS OF ONE MONTH'S DURATION IN A WOMAN AGED SIXTY.

BY DR. GEORGE C. CATHCART.

This patient came a week before complaining of hoarseness and loss of voice of a month's duration. On laryngoscopic examination the whole larynx was seen to be inflamed and red. There was very great difficulty in getting a view on account of the patient's intense nervousness, but it was possible to make out that there was almost complete occlusion of the anterior two thirds of the larynx and a narrow chink between the vocal processes in which were numerous crusts. The case was shown to elicit the opinion of members as to what the condition really was and the best method of treatment.

The PRESIDENT said there was a symmetrical lesion of the larynx, involving chiefly the ventricular bands. The picture seemed to be that of tuberculosis, but there was nothing but the picture to support the diagnosis.

Dr. WATSON WILLIAMS thought the disease too symmetrical for tuberculosis. It might be a kind of "glandular" laryngitis.

Dr. CATHCART replied that hoarseness was the only symptom in the case. There had been no cough, expectoration or loss of flesh.

MODEL BY WHICH WERE ILLUSTRATED THE VARIATION IN THE EFFECT OF COSTAL (BACK) AND ABDOMINAL (BELLY) BREATHING ON THE STRESSES, STRAINS, AND FRICTIONS IN THE THROAT AND LARYNX, MORE ESPECIALLY OF CRICOID CARTILAGE ON THE SPINAL COLUMN, AND ALSO THE TRANSVERSE AXIS OF RESPIRATORY ROTATION OF THE CRICOID ON THE THYROID CARTILAGES.¹

By DR. SCANES SPICER.

The model was shown to bring to the early knowledge of those specially interested in the causation and treatment of derangements of the upper air- and food-passages certain conceptions and conclusions which the exhibitor had arrived at in continuing his investigations on the action of intrinsically arising (antogenetic) mechanical forces in the human body in the genesis of diseases, and primarily with reference to the production of disorders of the nose, throat, larynx, and voice.

Among the problems of the exhibitor's own clinical experience which have forced themselves on his attention were such as :

(1) Why is it that after surgical removal of all obstructions in the nose and naso-pharynx mouth-breathing often persists and obstinately defies correction ?

(2) Why do so many persons with no apparent disease of the nose, throat, or larynx, or body generally, have recurrent sore throat, huskiness, hoarseness, and fatigue on slight use of voice ?

(3) Why is the posterior segment of the larynx so much more pre-eminently and obstinately involved in most laryngeal affections than its other parts (common bacterial invasions, tubercle, post-cricoidal cancer, etc.) ?

(4) Why do most people sniff, gasp, pant, or make other unpleasant noises when using the voice on slight activity, or even at rest ?

Continued investigation of these and many allied problems had thrown the exhibitor back after much practical, experimental, clinical and literary study to the conclusion that the basic factor in causation is the manner in which the respiratory mechanism is used, and whether its activities are favoured by, or opposed to, those of the other muscular mechanisms, and pre-eminently that dealing with body equilibrium or balance, *i.e.* with attitude or posture of head and trunk, with reference to the unceasing action of the force of gravitation.

¹ See author's previous papers, *Brit. Med. Journ.*, September 11 and October 18, 1909.

If at this point any objection should be made that the principle is already accepted that an explanation is to be found in "something or other wrong with the mode of respiration or production of the voice," he asked the objector to explain why such a large proportion of persons submitting to "breathing exercises" and "voice-training" at the hands of experts and specialists (often so self-styled), even under medical sanction and approval, had ended in wide-spread, signal, and dismal failure.

Was the matter really understood by laryngologists or vocal and respiratory experts, and could they get practical results in the desired direction? If not, why not? Not only the medical profession, but also its clerical, teaching, musical, and theatrical sisters, as well as the general body of the public, were clamouring for a satisfactory solution to such questions as are enumerated above.

To avoid misapprehension he added that :

(1) No deduction had ever been made from the working of the model, and no theory was based thereon.

(2) The parts of the model were not constructed to scale.

(3) It was not suggested that the model represents differential quantitative effects.

(4) The model was not "constructed with view of proving" anything, but as illustrating a generalisation based on a long series of observations on many living subjects over many years.

Discussion and criticism were invited on the fundamental conceptions which the model had been constructed to render concrete and easily intelligible.

Dr. HARRY CAMPBELL, having expressed his interest in the subject of respiration, said that as far as the effects upon the larynx of abdominal and costal breathing were concerned it should be remembered that in ordinary quiet breathing the larynx remained quite stationary. And in deep breathing as long as the volume of air was the same the effect upon the larynx was also the same, whether the breathing was abdominal or costal. He could not agree with Dr. Scanes Spicer that abdominal breathing made for sluggishness of the circulation in the splanchnic area. On the other hand, he was convinced that a deep abdominal inspiration squeezed blood out from the splanchnic area into the auricle. He considered it dangerous to argue from the model to the organism, if only because the rise and fall of the lungs in the chest were not represented upon it.

Mr. CRESSWELL BABER asked how Dr. Scanes Spicer accounted for the noise produced by abdominal breathing.

Dr. HORSFORD said that the subject was much before the singing public at the present moment. He himself was convinced that the costal type of breathing gave the best results in laryngeal cases as well as in singing. It was the most suitable form for voice-production, seeing that it increased

the elasticity, capacity, and resonance of the thorax. Abdominal breathers suffered more from laryngeal strain than costal breathers.

Dr. J. F. HALLS DALLY said the correct reply to Dr. Scanes Spicer's first question probably was that mouth-breathing, once it had become a habit, was difficult to correct; to his second question, that these phenomena resulted from an improper use of the voice, due to the employment of an incorrect neuro-muscular apparatus. As to the third question, he remarked that the occurrence of a transverse cricoid movement would be very difficult to prove. With reference to the fourth question, he thought that people who sniffed while drawing a long breath had never been taught proper control of the respiration. In drawing a deep breath the head was instinctively thrown back and a sniff resulted. He could not criticise the model because nothing had been claimed for it. He was of opinion that pure abdominal breathing was improper, and that back-breathing, also, by itself, was not the ideal, both of these methods being, in reality, only part of a whole. In all types of inspiration the diaphragm descends; this is followed by the movement of the lower ribs, and lastly, by the elevation of the upper thorax. These results he had observed on the living subject by means of X-ray examinations.

Dr. JOHNSON HORNE feared that the model would prove a dangerous guide to teachers of singing. With reference to Dr. Spicer's third question, he was sure the veriest tyro in laryngology would refuse to accept the suggestion that tuberculosis and other laryngeal diseases were produced by any kind of faulty breathing.

Dr. H. J. DAVIS reminded the Section of the difference in respiratory movement between men and women, the former using the diaphragm chiefly and the latter the upper chest.

The PRESIDENT asked whether Mr. Halls Dally's investigations were made with the abdominal organs *in situ* by Röntgen picture, or whether they were anatomical, when the abdomen was emptied of its contents. The Section was indebted to Dr. Halls Dally for his remarks, and members knew of the important paper which he had read before the Royal Society.

Dr. DONELAN suggested that the whole subject now being informally discussed was of sufficient importance to justify the calling of a special meeting of the Section in order that it might be thoroughly dealt with.

The PRESIDENT said Dr. Donelan's suggestion was a matter for the Council; he personally was in favour of such a discussion. He did not think that Dr. Spicer had helped his advocacy by bringing forward the model; Dr. Spicer's reasons were much more convincing than his model, as a model could be made to do anything. All would not accept the term "back-breathing"; "lateral costal" was a better one, and lateral costal breathing could not take place without the action of the diaphragm. It was proved many years ago by Duchenne (quoted in Brücke's 'Physiology') that as long as the abdominal organs were *in situ* and kept braced up, the contraction of the diaphragm elevated the ribs. If the liver and other abdominal organs were taken away and the diaphragm stimulated that did not occur. He, Dr. Grant, thought it was possible to "sniff" well with lateral expansion. But lateral expansion did not seem equal to the requirements of laughing, for which the abdominal muscles were necessary. With regard to the idea that it was erroneous breathing and the rubbing of the cricoid against the spine that caused carcinoma so frequently in that region, he thought it was rather the result of swallowing badly chewed food; defective dentition was, in his experience, a companion of it. As to the reason why people did not

breathe properly after they had had their noses cleared, it would be remembered what Carlyle said as to the characteristics of humanity in general. The Latin poet had well said we knew what was right and did what was wrong. The cause was inability to apply intelligently instruction in breathing.

Dr. SCANES SPICER, in reply, said that to change the present vicious type of breathing would place a new weapon in the hands of laryngologists. In reply to Dr. Harry Campbell, he stated that the descent of the diaphragm increased intra-abdominal pressure, and in this way produced circulatory stagnation. In reply to Dr. Jobson Horne, he expressed the opinion that tuberculosis in the posterior region of the larynx was favoured by abdominal breathing.

TUBERCULOSIS OF EPIGLOTTIS TREATED BY AMPUTATION OF DISEASED PORTION.

BY MR. HERBERT TILLEY.

Mr. L——, aged forty-three, seen March, 1907, on account of "slight pain on swallowing," "losing flesh," and frequent profuse "sweating at night." Physical signs of pulmonary tuberculosis were found, and evening temperature for a fortnight varied from 99.6° to 100.8° F. The tip of the epiglottis was swollen and ulcerated, and there was a slight extension of this condition downwards into the right ary-epiglottic fold. The diseased region was cocaineised and removed with a large-sized pattern of Lake's epiglottis punch forceps, and patient then spent four months in Ventnor Royal National Hospital. The patient rapidly recovered, and the stump of the epiglottis now presented a healthy scar. Patient weighed 13 st. 10 lb. as against 11 st. 3 lb. before operation.

Mr. HAROLD BARWELL pointed out that while, as a rule, tuberculosis of the larynx attacked the epiglottis late in the course of the disease, there was, nevertheless, a small group of cases in which the epiglottis was involved early. In these the tuberculosis both of the epiglottis and of the lungs was of a particularly chronic type, occupying in many instances the borderland between lupus and tuberculosis. For this reason these cases usually did well with local treatment such as amputation. He drew attention to his modification of Lake's forceps, which he had devised to take a straight instead of a semi-lunar bite, in order that the epiglottis might not be left with "horns" on either side, upon which some of the disease might be left.

WHEN IS CANCER CURED? LARYNX OF A MAN, AGED SEVENTYEIGHT, WHOSE RIGHT VOCAL CORD WAS REMOVED FOR EPITHELIOMA IN SEPTEMBER, 1896.

BY MR. HERBERT TILLEY.

Since then patient had enjoyed good health until a month ago,

when slight difficulty of breathing occasionally occurred; this became distressing about November 15. Exhibitor saw the patient in consultation on the 18th, his doctor performed tracheotomy on the 19th, and nine hours later the patient died. The cicatrix corresponding to the original right vocal cord and arytenoid was quite healthy, but a well-developed epitheliomatous ulcer occupied the greater part of the *left* vocal cord. The case was seen by Sir Felix Semon in consultation before the operation in 1896; he confirmed the diagnosis of epithelioma, which was proved by the microscope after operation. The patient was shown at the Laryngological Society some five years after operation. The original operation took place thirteen years ago. Microscopic sections of the growth were also on exhibition.

Dr. H. J. DAVIS supposed that a patient who had had epithelioma once and was cured of it was still liable to a fresh outbreak owing to the presence of the predisposing causes that had favoured the occurrence of the first attack.

Mr. P. DE SANTI did not regard the second growth as a recurrence but as an entirely new tumour. The disease had been cured as far as it was possible to cure this disease. He narrated a case in which he had removed a breast for cancer and in which some years later cancer in the liver developed. This also he did not consider to be a recurrence.

Dr. STCLAIR THOMSON drew attention to the cases of epithelioma of one cord reported by Dr. Newman and others, in which, after a time, a growth appeared on the other cord and so gave rise to suggestions of contagion. The case now before the Section, however, would lead one to think of the possibility of a separate and independent outbreak of the disease.

Mr. MIDDLEMASS HUNT related a case similar to the present one, in which operation was followed by a freedom of trouble for five years. Then the disease appeared on the other cord and was removed, but the patient ultimately died.

The PRESIDENT said there could be no doubt about the diagnosis.

COMPLETE STENOSIS OF LARYNX LEFT AFTER DIPHTHERIA AND
TRACHEOTOMY IN A BOY WHEN AGED 1 YEAR AND 2 MONTHS,
COMPLETELY CURED BY REPEATED INTUBATIONS SPREAD OVER
THREE YEARS.

By Dr. STCLAIR THOMSON.

The patient was admitted in September, 1906. Three weeks before admission tracheotomy had been performed for diphtheria. On admission it was found that he was absolutely voiceless; there was no respiration through the larynx, but he breathed entirely through a well-done low tracheotomy. By direct laryngoscopy it was seen that the cords were intact, but with a web immediately

below them completely closing the glottis. Under chloroform this diaphragm was broken down with a probe and the smallest-sized intubation tube was inserted. The tracheotomy tubes were removed, but the wound in the neck was kept open by wearing a rubber obturator such as is used in the alveolar drainage of maxillary sinusitis. The wearing of the intubation tube or the tracheotomy tube was alternated from October, 1906, up to the summer of 1909. The child learnt to speak in the intervals of being intubated, but the intubation tube had soon to be replaced owing to gradually returning stenosis immediately below the cords.

The tracheotomy tube was blocked up about three weeks ago, and finally removed a fortnight ago.

The boy, who was now aged about 4 years 4 months, could speak freely with a strong, clear voice. The tracheotomy wound was closed. His breathing was a little stridulous on exertion, and it was found that this was due to the fact that one vocal cord was completely fixed in the cadaveric position, or slightly internal to it, evidently from cicatrisation around the arytaenoid joint.

The case showed that laryngeal stenosis from diphtheria may occur even although a good, low tracheotomy has been carried out. It was also claimed that the case showed the success of treatment in even complete occlusion of the glottis by means of tracheotomy and intubation. The only objection is the duration of treatment, but with patience and perseverance a result is obtained which is seldom equalled and never exceeded by such methods as laryngo-fissure or laryngo-tracheostomy.

Dr. HERBERT TILLEY congratulated Dr. StClair Thomson upon the result. He himself had at present a case getting well under the same treatment, which he very much preferred to laryngostomy.

A CASE OF PROBABLE MALIGNANT DISEASE OF THE LARYNX IN A WOMAN.

By MR. HAROLD BARWELL.

The patient was a female, aged forty-seven, the mother of six children, of whom five were alive and healthy, and one dead as the result of an accident; no miscarriages. Pain in the throat, especially on swallowing, began eleven months ago, and at the same time a lump was noticed under the jaw. The dysphagia had got worse and now radiated to the right ear. There were hard, fixed glands behind the angle of the jaw on the right side. A

large mass filled the right half of the larynx and concealed the right cord; the left cord was normal and the speech was unaffected, showing that the right cord was not involved. The mass was covered by conspicuous white elevations. The growth had not spread on to the pharynx. The symptoms have somewhat improved after a fortnight's treatment with potassium iodide and mercury.

The exhibitor would welcome opinions as to operation, especially as to whether anything short of a complete laryngectomy might be advisable in view of the healthy condition of the cords.

Mr. ATTWOOD THORNE asked how long the case had been under treatment, because it looked as if it would have been easily removed a few weeks ago.

Mr. H. BARWELL replied that he had only seen it a few days ago for the first time.

Mr. P. DE SANTI favoured operation, either hemi-laryngectomy or the complete operation, according to the extent of the disease.

Dr. H. J. DAVIS thought it looked like a fungating gumma, and advised a microscopic examination of the growth before proceeding to any operation.

The PRESIDENT considered the case one of epithelioma, and the advisability of operation would depend upon whether or not it extended on to the wall of the pharynx.

A SERIES OF SKULLS DEMONSTRATING VARIATIONS IN THE RELATIONS OF THE SPHENOIDAL SINUS OF THE SPHENO-ETHMOIDAL CELLS.

BY DR. W. S. SYME.

The skulls were culled from a total of 250 examined, and were examples of the more or less abnormal relationships which may exist—(1) between the two sphenoidal sinuses; (2) between the spheno-ethmoidal cell and the sphenoidal sinus; (3) between the sinus and the optic foramen on its own and in the opposite side; (4) between the sinus and the carotid tract on its own and on the opposite side; (5) between the spheno-ethmoidal cell and the optic foramen. Some of the specimens also showed the formation of well-marked septa in the sphenoidal sinns.¹

The PRESIDENT expressed the thanks of the Section to Dr. Syme for the interesting exhibition.

BOY, AGED THIRTEEN, SHOWN IN MARCH, 1908. TURBINAL HYPERTROPHY AND DEFLECTED NASAL SEPTUM.

BY DR. DONELAN.

¹ We hope to publish a more detailed account in a later issue.

SPECIMEN: GOITRE AND PORTIONS OF LARYNX AND TRACHEA FROM WOMAN, AGED THIRTY-SEVEN, CAUSING FIRST LEFT RECURRENT PARALYSIS, THEN RIGHT, WITH INSPIRATORY DYSPNOEA; HIGH TRACHEOTOMY.

By DR. DONELAN.

MR. FITZGERALD POWELL said that the patient had died as a result of pressure on the recurrent nerves, and remarked that when such pressure existed immediate removal of the goitre was called for.

CASE OF LARYNGEAL GROWTH.

By MR. P. R. W. DE SANTI.

This patient, a woman between forty and fifty, was shown at the meeting of the Laryngological Section, May, 1909, with a tongue-like growth attached to the anterior commissure and right vocal cord. This growth was movable, soft, and in colour like a soft fibroma. A piece had been removed and reported to be microscopically an angioma. An important factor was that the whole of the right vocal cord was uniformly red and somewhat thickened. The growth was considered by members to be a soft fibroma. Exhibitor had removed it with endo-laryngeal forceps, but since removal there had been a recurrence, and microscopic sections of the growth revealed masses of giant-cells and one tubercle bacillus. The woman had physical signs now of pulmonary tuberculosis, and there was considerable inter-arytenoid swelling, and swelling also of the right vocal cord. The question was, was the growth shown in May a "tuberculoma," or a simple soft fibroma, and the present tuberculous condition an infection that had taken place only since the patient was last shown? Opinions were invited as to diagnosis and treatment.

MR. HAROLD BARWELL thought the case instructive and peculiar. The appearance of the larynx certainly suggested tuberculosis now. But that diagnosis had not occurred to anyone on the former occasion.

DR. HODSON recommended ether vapour and hexamethylene in the treatment of phthisis.

MALE WITH MALIGNANT TUMOUR OF THE NECK, SHOWN AT LAST MEETING.

By DR. WILLIAM HILL.

Again brought forward to show decrease of tumour after application of 50 mgrm. of radium bromide for twenty-two hours.

MALE WITH CARCINOMA OF GULLET.

By DR. WILLIAM HILL.

Six applications of radium since July. Before treatment the patient could only swallow liquids and *purées*; could now "eat almost anything," to quote the patient's own words.

REMOVAL OF THE FRONTAL BONE FOR SEPTIC OSTEO-MYELITIS.

By MR. CHARTERS J. SYMONDS.

? MALIGNANT DISEASE OF LARYNX.

By MR. ROUGHTON.

Male, aged twenty-six, had always suffered from hoarseness, which was attributed to a burn of the neck in infancy. There was an ulcer on the right cord, the movements of which were impaired.

The PRESIDENT thought the laryngeal appearance might be produced by tuberculosis.

Dr. H. TILLEY suggested syphilis as the cause, and with him—

Mr. H. BARWELL agreed.

A LARYNGEAL CASE FOR DIAGNOSIS.

By MR. ROUGHTON.

Woman, aged forty-two, suffered from cough and hoarseness for six years. There was no sign of phthisis and no tubercle bacilli in the sputum. Opinions were asked on the diagnosis.

The PRESIDENT regarded it as pachydermia of the larynx in an alcoholic subject.

Mr. FITZGERALD POWELL agreed with the President, and said there was also nasal obstruction.

CASE OF PECULIAR REDNESS OF THE SOFT PALATE IN A MAN

AGED FORTY-ONE.

SHOWN BY DR. DUNDAS GRANT.

Within a comparatively few weeks the patient discovered a redness of his palate when suffering from a slight sore throat. There could be little doubt, however, that the condition was of much longer standing in view of the white sclerotic state of the mucous membrane covering the whole of the hard palate. There was a red areola round the teeth. The tongue and larynx were

normal. The patient had smoked about two ounces of tobacco a week in a short pipe.

The exhibitor brought the case forward for diagnosis. He was inclined to think that it was an early buccal manifestation of a dermatosis, perhaps lichen ruber planus, but there was as yet no sign of disease of the skin.

Mr. H. BARWELL remarked that the redness did not fade on pressure.

Dr. H. J. DAVIS thought that the condition was septic and arose from the teeth.

Dr. DAN MCKENZIE observed that the teeth were the seat of severe pyorrhœa, and that the red patch looked like an excoriation rather than a simple erythema. He therefore agreed with Dr. Davis.

D. M.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

Saturday, December 4, 1909.

Dr. EDWARD LAW, *President, in the Chair.*

PRESIDENTIAL INTRODUCTORY REMARKS.

GENTLEMEN,—My first duty is the very pleasant one of thanking you for the great honour which you have conferred upon me in electing me your President. I should have hesitated to accept such a great distinction and enviable responsibility were I not convinced that every member will help me to further the best interests of our Section.

At this opening meeting of our third session I should like to touch upon a few points, which, although containing nothing new perhaps, still merit attention and deserve reiteration, but first of all I am sure that every member will wish me to express our most cordial thanks to my distinguished and only predecessor, Dr. McBride, who is unfortunately absent to-day, for his very conspicuous services during the last two years. Though resident in Edinburgh, Dr. McBride has never missed presiding at a single meeting of this Section. While this speaks volumes for his untiring zeal and interest in the Section, nevertheless it is a most awkward and disconcerting precedent for his successors. Dr. McBride is a most able and experienced past-master in everything relating to presidential work, and I feel it is an enhanced honour to follow in

his footsteps. He has very successfully steered an amalgamation of two kindred societies with the Royal Society of Medicine, and it may not be out of place to glance at some of the ways in which a Section differs from a special society.

An interchange of information and ideas with other sections must tend to stimulate progress, to thwart charlatanism, and to arouse enthusiasm in the broadest and highest attainment of knowledge. It should assist in obtaining the true explanation of clinical facts by the propagation of the most recent pathological, bacteriological, and cytological data, give useful hints in reference to nuthought-of methods of treatment, and suggest new fields of work. Perhaps, some day, intersectional representatives will be appointed or a general committee formed to further intersectional reciprocity, by collecting valuable material incidentally cropping up in a Section, and distributing the same. Such a committee would act as a clearing-house, watched over by the parent Society, which is not only a store-house of rooms, books and specimens, but of learning open to all.

Our record of the two years' high standard of work is one of which any section may be justly proud, and augurs well for our continual prosperity. The success will continue and grow if we are wise enough to make use of the palpable advantages of this bond of union and ready means of inter-communication with every branch of medicine and surgery, and to guard ourselves against the disadvantages of a large and increasing family. Increased numbers of members and the presence of many visitors make the examination of patients more difficult, and to some extent interfere with that clanship and intimacy which is so useful in small societies. If such be the case let each one of us, whilst imbued with unswerving loyalty to our parent Society and its various affiliated sections, try to create for ourselves not only a scientific atmosphere, but also that human atmosphere of trust and camaraderie which knits men together in the best sense in some secret fraternities. Such sectional *esprit de corps* will be a perpetual antidote to jealousies and cynicism; will eliminate selfishness, embolden shy and nervous men to divulge their hoarded knowledge and bottled treasures, and encourage members to bring forward their blunders and mistakes for free discussion and general instruction as fearlessly as their successes. It will enable us to debate pet theories without prejudice, and sometimes early to recognise new ideas, and oft-times brilliant conceptions, which, through imperfect knowledge and want of fair consideration, are sometimes

erroneously looked upon as useless fads, and, unfortunately, ignored or scoffed at for an indefinite period.

A section will be guilty of culpable negligence which does not properly tap the matchless wealth of unrivalled and inexhaustible clinical and pathological material ever available in the numerous clinics of this densely populated metropolis. Our Section, being an integral part of the Royal Society of Medicine, with its proceedings published in the general transactions, should do the greatest possible variety of work without "over-specialising" on the one hand, or, if I may be allowed the expression, of "over-generalising" on the other, into the domains of general medicine or surgery, or trespassing upon the rights of sister sections. The larger the scope of work the greater will be the broadcast dissemination of special knowledge and experience of all that pertains to otology to our professional brethren for the prevention and cure of disease and the ultimate benefit of humanity. A brief review of our work should inform us whether, in these respects, we have struck the happy medium.

Most interesting papers, entailing enormous labour to the writers, have been read, and thoroughly appreciated in accordance with their originality and exceptional excellence, and if your Council continue so wisely to exercise their discretion, and contributors approach the high level given them by Mr. Sydney Scott, Mr. C. Ernest West and Dr. Wyatt Wingrave, nothing more can be desired except their more frequent occurrence. Numerous instructive cases and anatomical specimens have been shown, including Mr. Arthur Cheate's unique collection of temporal bones and specimens, and stereoscopic photographs by Mr. Albert Gray, to whom, as you are aware, has been awarded, with Dr. Neumann, the Lenval Prize at the International Otological Congress at Budapest. It is a great honour to have shared this much coveted international prize, and I am sure that you all unite with me in offering to Dr. Gray our sincerest congratulations.

Valuable microscopical work has been demonstrated and most profitable discussions taken place, with, perhaps, may I venture to say, too much attention to the ear itself, and possibly too much time to the temporal bone and its surgical possibilities. Here lies an apparent tendency for a section to "over specialise," or it would be better to say "over time," pressing and favourite subjects, a bias which is doubtless prompted and encouraged by the small numbers of our meetings and the consequent all-too-limited time at our disposal.

I am glad of this opportunity of bringing forward the claims of the body as a whole; of neighbouring regions, especially the nasopharynx, and the various complex interests of our specialty, whilst quite recognising that it is impossible to "over-specialise" any organ, particularly the ear, as is clearly proved by the brilliant work of our own explorers into the deep and hidden recesses of the labyrinth. Such investigations are of incalculable value to otology and are epoch-making in the differentiation, classification, and treatment of labyrinthine lesions. They show not only that labyrinthine extensions are of more frequent occurrence than is usually supposed, but also that intra-cranial complications are more frequently associated with suppuration of the middle ear and its adjoining cavities than with suppurative affections of the accessory sinuses of the nose—a fact palpably pointing to the vital importance of that great surgical principle, free drainage. Again, mastoid and labyrinthine operations are undertaken for such urgent symptoms, the menace to life is often so great, that over-cautious conservatism would be fatal; the beneficial results are usually so marked and life-saving, that no advocacy is required for their further extension, progression, and perfection.

Much time and thought are everywhere very naturally and appositely given to rare cases; to the differential diagnosis and curative treatment of all aural affections; to the prevention of acute ailments becoming chronic; to the extension of disease from the tympanum to the labyrinth, lateral sinus or cranial cavity, and to all complications which endanger life; whilst, perhaps, too little time is bestowed upon prophylactic measures; to the propagation of mischief from the naso-pharynx to the tympanum; to the direct and indirect, near and remote injurious effects of unsatisfactory nasal conditions; to the pathogenic influence of systemic and non-aural diseases, constitutional diatheses, idiosyncrasies, and to the thousand and one other predisposing and causative factors of ear disease.

A careful study and systematic examination of the body, particularly of the nose and throat, is a matter of clinical routine in the elucidation of ear disease, and the great importance of close attention to every detail cannot be over-estimated, when we remember the difficulty, frequently the impossibility, of relieving tinnitus, or of improving the hearing in many cases of deafness, that baneful affliction which often unconsciously creeps along to mar and sadden the lives of many of our most charming fellow-creatures and useful citizens by making them lonely in their own

homes: the parent oblivious to infantile sounds of budding speech or childish prattle, or the child insensible to the fond and endearing words of an unhappy crooning mother; by making them foreigners at their own tables, and by so seriously handicapping them in their social and business intercourse in life—truly, a solitude grievous to contemplate, and rarely receiving adequate sympathy or discernment from friends or the world at large. Probably the loss of no other sense leads to so much unhappiness, is so acutely felt or so silently borne by the sufferer as what is so often appallingly designated “only deafness.” It is difficult to fathom why deafness and ear-ache are so frequently prefaced by that very inappropriate word “only.”

The more deafness and tinnitus are encountered the more the hope grows that the best energies of our members will be devoted to the prevention and alleviation of these scourges, and that young and ardent enthusiasts, now happily so well equipped for the fray, will not be deferred from tackling the difficulties because so many have failed before them. What a glorious outlet for redundant energy and commendable ambition! May the seeming hopelessness of the tasks produce a weird obsession and an irresistible fascination which will finally culminate in success!

Deafness should become less frequent through the prevention, early recognition and improved methods of treatment of ear diseases, and in this respect much may be expected from the compulsory examination of the ears, throats, and noses of school-children.

This is neither the time nor place to discuss where these examinations should be made, or the treatment, whether operative or otherwise, carried out, but it is to be hoped that the members of our profession who undertake these duties will be adequately remunerated for their valuable services with other officers of the State or County Council.

Here we are once more faced with our close connection with the naso-pharynx—the source of origin of middle-ear catarrh and almost of all middle-ear suppuration, and therefore more or less responsible for a large majority of all cases of deafness. Dr. Francis Packard, in an interesting paper entitled “The Importance of the Thorough Study of Naso-pharynx in Treatment of Diseases of the Ear,” read at the annual meeting of the American Otological Association in Boston this June, states:

“There is a saying which has well-nigh become a proverb amongst aurists, and has been attributed to various distinguished

laryngologists in the United States, that 'some day the rhinologist will do away altogether with the necessity of the aurist,' meaning thereby to imply the great frequency with which affections of the ear depend upon diseases of the upper respiratory tract."

Gentlemen, we need not be over anxious, as this Section of Otology, from its very commencement, made wise provision for such a—no, not catastrophe—happy state of affairs. Our regulations begin, although sometime forgotten:

"1. The objects of the Section are the cultivation and promotion of otology and rhinology and their allied sciences."

In conclusion, I should like to offer a hearty welcome to our visitors, and to you, my fellow members, my renewed thanks."

On the motion of the PRESIDENT, it was unanimously agreed to offer an address of congratulation to Professor Politzer on the fiftieth anniversary of his graduation as Doctor of Medicine.

The following papers were read and cases shown:

A CASE OF AUDIBLE TINNITUS.

By MR. HERBERT TILLEY.

Girl, aged thirteen, sought advice for a "purring" noise in her right ear, which she had noticed for at least two years, but which had become louder during the past twelve months after an attack of "influenza."

Hearing in both ears was normal, and no pathological conditions could be seen in the meatus or in the naso-pharynx. The general health was excellent. She had menstruated once—about four months ago—but this seemed to have exerted no influence for good or evil upon the aural symptom.

Listening through the otoscope, it could be noted that: (1) The "purring" sound—very like a hæmic murmur—was best heard when the head was erect, and it was synchronous with the pulse. (2) It was diminished by either very light pressure over the right carotid artery, or by much firmer pressure on the left. Tilting the head towards the left shoulder has also a similar effect.

The pulsating murmur could be heard in a quiet room if the observer's ear was placed close to the patient's right ear, and it was just perceptible through a stethoscope applied to the temporal bone just above the pinna.

MR. CRESSWELL BABER recalled a similar case he had shown to the British Medical Association. That patient had suffered from anæmia, and nothing could be seen wrong with the membrane.

Dr. H. J. DAVIS advised the administration of perchloride of iron and hydrobromic acid. The tinnitus was, he thought, too rough for a hæmic murmur.

Mr. WAGGETT had noticed that pressure upon the external jugular vein stopped the noise, and advised that this vessel be tied. He related a case of his own in an old woman, in whom the tinnitus was audible after food. It disappeared after a time.

Dr. LEE described a case in which the noise had first appeared after the patient had been carrying a sack of flour. It was impossible to say what the pathology of these cases was.

Mr. FITZGERALD POWELL thought the noise was dependent upon a low blood-pressure, and recommended the administration of $\text{m} \times$ of adrenalin three times a day. He thought the history longer than was indicated by the account, for he had been told that when a little child the patient used to wake up at night and say she heard a bee humming. He did not think there was any anaemia, and considered ligature of the external jugular vein a somewhat heroic procedure.

Dr. DUNDAS GRANT drew attention to the fact that the sound was distinctly diminished by pressure on the vertebral arteries in the sub-occipital region. He attributed it to an anatomical peculiarity.

Mr. A. L. WHITEHEAD said that the patient seemed to suffer no discomfort from the tinnitus, consequently ligature of the external jugular, though a useful suggestion, was, he thought, unnecessary.

The PRESIDENT remarked that the noise was readily stopped by slight pressure.

Mr. H. TILLEY, in reply, said it was difficult to tell how long the noise had lasted. With reference to treatment he could not believe that the tinnitus was due to any constitutional cause. The child was quite healthy and there was no sign of any other lesion. And as the child experienced no inconvenience from the noise—unless she listened she did not hear it—he was averse from exposing her to the risks of a general anaesthetic. Besides, pressure upon the external jugular vein only lessened the tinnitus: it did not stop it altogether.

SUMMARY OF THE POST-OPERATIVE TESTS IN EIGHT CASES OF LABYRINTHINE DISEASE.

By Mr. RICHARD LAKE AND Dr. NORMAN PIKE.

“The notes upon the histories of the cases are only intended to present the reader with a general view of the course of events; the points we wish to place before the Section being the results of the tests for labyrinthine disease *after* operation, mastoid or labyrinthine.

“CASE I.—J. H——, male, aged thirty-five. First attendance September 12, 1907; discharge from right ear which had been intermittent for six or seven years. Deaf with right ear as long as patient could remember; worse lately. Humming tinnitus right ear. A few weeks after first visit, an attack of vertigo; confined to bed three days; objects moved up and down. August

1907, severe attack of vertigo after running for train; duration, four minutes.

"*Operation, September 25, 1907.*—Stenosis of external meatus; perforation of Shrapnell's membrane. *Labyrinth*, depression seen in the bone where prominence of canal should be.

"*Subsequent History.*—No vertigo since operation.

"*Present State.*—Thinks he hears better than before operation.

"*Tests.*—Caloric, right ear, normal. Rotatory, 10 turns to R.; nystagmus, 25 secs.; no vertigo. Rotatory, 10 turns to L.; nystagmus, 25 secs.; slight vertigo.

"*CASE 2.*—J. E——, male, aged fifty-five. Frequent attacks of vertigo for three or four years. Suppurative otitis of long duration in left ear.

"*First Operation, 1904. Left Radical Mastoid.*—The bone over external semi-circular canal destroyed, and membranous canal exposed for about $\frac{3}{16}$ in. This was removed.

"*Subsequent History.*—Three and a half years almost free from vertigo, then severe attack lasting thirty-six hours, with vomiting and nausea.

"*Second Operation. Ablation of Labyrinth, February, 1908.*—Vestibule opened up with chisel and gouge, interior swabbed with 40 per cent. formalin. Foramen ovale opened and good passage made into vestibule. *After operation*, nystagmus on rotation.

"*Present Condition.*—Since second operation no vertigo, no air conduction to tuning-fork 16 C to C₂₀₄₈.

"*Tests.*—Caloric. Left ear no reaction. Right ear normal. No spontaneous nystagmus.

"*CASE 3.*—G. F——, male. Discharge from left ear nearly all his life. Tinnitus in the right for some years. Occasional attacks of vertigo, which became worse and of greater frequency of late, occurring almost daily. Staggered chiefly to the left side; objects moved horizontally; he had to stay in bed for eight weeks. Nystagmus more marked during the attacks.

"*Operation, May, 1908. Left Radical Mastoid.*—Sinus found leading into left external canal.

"*Tests.*—Aconimeter 0; voice 4 in.; Rinne negative; bone-conduction slightly diminished.

"*Subsequent History.*—Ear dry—much better—though complained of swaying when standing. Feeling of pressure on top of head; no tinnitus, no spontaneous nystagmus. On turning head sharply to the left, nystagmus > on looking to right of short

duration; unable to work, and complained constantly of inability to work; caloric test left strong.

"*Second Operation.*—Vestibule entered through external and posterior canals. Facial nerve exposed. After the operation slight nystagmus on looking to the left of only one week's duration. No vertigo, facial paresis incomplete on third day (now well), patient up upon fifth day.

"*Present State.*—No spontaneous nystagmus.

"*Tests.*—Caloric, left, negative: Rotatory, 10 turns to right; nystagmus, 3 secs.; rotatory, 10 turns to left; nystagmus, 18 secs.

"*CASE 4.*—F. A——, discharge from right ear twenty-seven years; cephalgia two years; vertigo, three attacks last week; falls to left.

"*Operation, June, 1907. Radical Mastoid.*—Prominence of external canal seen to have been destroyed.

"*Subsequent History.*—On syringing head falls to right. Right pupil dilated. July 1, severe vertigo, falls to right; July, 1907, labyrinth opened above facial canal and through foramen ovale. Post-operative nystagmus, greatest excursion to right.

"*Present State.*—No spontaneous nystagmus; rotatory test 10 by R., 20 secs., very slight vertigo; 10 by L., 18 secs., rather more vertigo. Caloric, R. negative; L. rapidly produced vertigo; patient falling to R. (nystagmus not able to be noted).

"*CASE 5.*—Nurse B——, female.

"*Past History.*—Discharge from left ear since childhood; frequent attacks of vertigo.

"*Operation, March, 1908. Radical Mastoid.*—Returned to work June 11; wound behind ear not healed; since discharge from ear. Later, occasional cephalgia and vertigo, slight nystagmus.

"Symptoms point to labyrinthine or intra-cranial lesion.

"*Operation, December 10, 1908. Labyrinthine Operation.*—No pus in labyrinth. Escape of cerebro-spinal fluid; recovery tedious; dressings often soaked in cerebro-spinal fluid. Pyrexia, seven days; marked lateral nystagmus; complaints of headache and giddiness; tendency to lie on right side. Became very ill; incontinence of urine and wandering.

"December 30.—Lumbar puncture. Clear fluid. O.D. a little blurred; some pus in depth of wound.

"January 6, 1909.—Nystagmus more marked on looking to left (according to Neumann and Bárány this points to an intra-cranial lesion). Giddy when she sits up; tendency to fall to right.

"Left January, 1909. Slight spontaneous nystagmus.

"CASE 6.—H. S——, male.

"*Past History*.—One year vertigo; old otitis media suppurativa; perforation in Shrapnell's membrane; pressure on external meatus caused vertigo (hearing good).

"*Operation, January 22, 1908. Removal of Left Labyrinth*.—Left external canal and vestibule opened, etc. (extensive destruction of external canal found).

"*Subsequent History*.—Slight vertigo after walking.

"*Present State*.—Slight spontaneous nystagmus, right and left; caloric test, cold, left negative; right normal, with some vertigo.

"CASE 7.—A. M——, aged forty-seven, male.

"*Past History*.—Left ear has discharged for many years. Refused by life assurance company.

"*Operation, October 16, 1907. Radical Mastoid Left*.—Stayed in bed after operation ten days; on getting up was weak and could not stand alone, not feeling steady. This feeling of unsteadiness lasted another six days. Objects did not move.

"*Subsequent History*.—Never had a definite attack of vertigo, but if he turns the head suddenly in any way he feels unsteady for a short time.

"*Present Condition*.—No spontaneous nystagmus. Caloric reaction, cold, left ear negative, right slight, but definite reaction. Rotatory test, 10 by L., 19 secs., very slight vertigo; 10 by R., 7 secs.; left ear dry; voice heard in concha. Rinne negative; bone-conduction diminished. With eyes shut and feet together tends to fall backward; walks backward with eyes shut fairly well.

"CASE 8.—V. D——, female, aged twenty-two. Had polypus removed from right ear in childhood. Ear was dry and gave no trouble until January, 1908, when free discharge began and continued. Six weeks ago facial paralysis developed and mastoid tenderness. No vertigo. Confined June, 1908.

"*Present State*.—There is extreme tenderness over mastoid (right), extending for some distance. Meatus externus choked with polypi.

"*Operation, July 1, 1908. Radical Mastoid*.—Lateral sinus situated anteriorly and superficially.

"*Tests before Operation*.—Conversation voice, 3 in.

"*Present State*.—Conversation voice, 1 yd. Caloric reaction right negative. Rotatory test, 10 by R., strong nystagmus, 25 secs.; 10 by L. very slight nystagmus.

"The cases we are presenting to the Section have not been selected in any way to illustrate peculiar points, but consist of

those cases which have been attending at the hospital during the time we have been working together, and they are brought forward in the hope that they will prove of interest as having a bearing on still moot points, and as being in general of interest from the point of view of labyrinthine symptomatology. The points to which we would draw attention are that all the cases, with the exception of one, suffered from vertigo during recovery from the radical mastoid operation, although this was in every instance brought to a completely successful issue; that post-operative vertigo continued in three cases, and was so severe as to necessitate destruction of the labyrinth; that in two of the cases, Nos. 7 and 8, although vertigo was absent in No. 7, and there was no history of a definite attack, but only of some slight loss of equilibrium, yet in both these cases the caloric irritability on the same side as the radical mastoid was negative. These may be classed as latent labyrinthitis (Bárány). In Case 1, which was associated with very severe attacks of vertigo, at the radical mastoid operation a distinct depression was seen over the promontory of the external semi-circular canal, and in this case it is shown that complete recovery may occur, both as regards vertigo and the function of the labyrinth, as proved by the caloric or turning reactions; that as regards caloric and turning reactions more reliance should be placed on the former, as is shown in Case 6, in which ten months after the labyrinth was removed the turning reaction was equal on both sides; that in cases where the labyrinth was removed by operation the caloric reaction, as would be expected, was negative.

"With regard to nystagmus in these labyrinthine cases, in No. 3 there was no spontaneous nystagmus a few weeks after the operation; in one, No. 6, there was slight right and left nystagmus. With regard to the nystagmus immediately after the operation there was usually strong nystagmus to the sound side, which gradually diminished until in a few weeks there was either no spontaneous nystagmus or slight right and left. In Case 3 the nystagmus was never very strong and it disappeared in one week, whereas in Case 5 the nystagmus was most marked on looking towards the operated side. This is said to point to an intra-cranial lesion. In regard to Cases 7 and 8—so-called latent labyrinthitis—in neither of these was any spontaneous nystagmus noted. In both these cases the turning nystagmus was much below the normal on testing the affected ear."

MR. CRESSWELL BABER expressed his indebtedness to the readers of the paper. He had recently seen Bárány applying the caloric test while

the patient was under an anæsthetic, and wished to know whether this had been done in the cases now being discussed. The quick movement of nystagmus was abolished during anæsthesia. The present results seemed, on the whole, to support Bárány.

Dr. MILLIGAN asked which of the methods, by rotation or the caloric, did Messrs. Lake and Pike prefer.

Dr. DAN MCKENZIE, referring to the classification of labyrinthitis into "serous" and "purulent," suggested that, clinically speaking, "mild" and "severe" were preferable. He drew attention to a paper of his on the clinical value of the labyrinth tests in the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*,¹ in which a modification of Bárány's caloric test was described. It consisted in a measurement of the period required to evoke caloric nystagmus. In that paper, also, he had reported several cases of circumscribed labyrinthitis cured by the radical mastoid operation, in some of which the vestibular sense was found to be impaired after the cure. With regard to vertigo coming on after the operation, he drew attention to that class of mild post-operative labyrinthitis in which the phenomena of vestibular irritation, though well-marked at the onset of the attack, rapidly disappears, leaving the labyrinth functionally intact. Alexander had recently described four of these cases. The speaker suggested that their occurrence was due to interference with protective granulation-tissue on the outer wall of the labyrinth.

Mr. A. L. WHITEHEAD asked whether the canal was removed in the third case.

Mr. WEST, regarding the terminology, preferred the retention of "serous" and "purulent" to "mild" and "severe," as the former expressions implied what actually could be seen, and the cases showed all kinds of gradations between "mild" and "severe." He warned the Section that all cases of post-operative labyrinthitis were not trivial. Sometimes they proved fatal. Mr. Lake's operation results coincided with those of other workers, and the speaker welcomed them on that account. He said that if there was a fistula in the labyrinth wall with a functionally active labyrinth the radical mastoid operation was sufficient to cure it, and the function of the labyrinth would remain intact. Referring to the comparative value of rotation and the caloric test, he said that every now and again a patient, whose labyrinth had been extirpated, would react to rotation.

Mr. LAKE, in reply to Mr. Baber, said he had never practised the caloric test during anæsthesia. With reference to post-operative labyrinthitis, he said that such cases were more frequent on the continent because the continental surgeons were content to treat septic wounds by asepsis simply. They did not use strong antiseptics, as they should do. In reply to Mr. West, he said he knew the importance of leaving the external canal alone. Permanent vertigo following the complete operation was, he suggested, due to cicatricial contraction around the nerve.

Mr. NORMAN H. PIKE said that Bárány had shown that if one labyrinth is obliterated the sound labyrinth may assume its function, and then rotation sets up nystagmus lasting about 10 secs. instead of 25 secs. He had only once seen a case in Vienna showing the fistula symptoms. The application of this test was a delicate matter. If pressure in the meatus induced strong nystagmus that indicated a fistula. If, on the other hand, the nystagmus induced was slight, then it might be set up from pressure

¹ Vol. xxiv, p. 646.

about the foramen ovale. The relationship between nystagmus and vertigo had been the subject of much discussion. But by practising the caloric reaction on blind people he had been able to show that vertigo was independent of the subjective movement of external objects induced by the nystagmus. He had recently seen an ingenious rotation chair at Professor Mygind's clinique, which could be made to stop suddenly during rotation.

A CONTRIBUTION TO THE STUDY OF THE PATHOLOGY OF DEAF-MUTISM.¹

(With lantern-slide demonstration.)

BY DR. ALBERT GRAY.

THE PRESIDENT, on behalf of the Section, expressed his gratitude to Dr. Gray for his interesting paper. He was glad to see that Dr. Gray was not content to rest upon the laurels he had already won with his work upon the labyrinth.

MR. MACLEOD YEARSLEY congratulated Dr. Gray upon his work, and associated himself with him in his reference to the enormous value of obtaining full clinical details in the cases from which specimens were obtained. He suggested that there was here an opportunity in which the Section might prove useful. If Dr. Gray would send exact details of the proper method of preserving specimens to each member of the Section, the speaker was sure that he would in that way be able to obtain complete records. Mr. Yearsley went on to say that he had recently examined 500 deaf-mutes in the London County Council schools. Deaths had occurred among these children, but hitherto he had been unable to obtain any specimens. Should the opportunity arise he would be glad to send them to Dr. Gray.

PROF. URBAN PRITCHARD was very interested in Dr. Gray's sections, particularly in those which showed the outgrowth from the stria vascularis, which resembled very closely the tegmentum vasculosum in the cochlea of birds. The cells around the process were also very similar to the pigmented cells of the tegmentum. He asked if Dr. Gray looked upon this outgrowth as inflammatory. It did not look like inflammatory tissue. The depression of the membrane of Reisner might be an artefact unless great care was taken in the preparation of the specimen.

MR. S. SCOTT congratulated Dr. Gray upon his paper. He emphasised the need for a complete examination of the auditory system, including the vestibular sense, during life, and the complete examination of the end-organ, nerve-trunks, cerebral connections, etc., after death. He had recently carefully examined twenty-five cases, one of which had died fourteen days ago, and Drs. Mott and R. Jones had found changes in the pyramidal layer of the cortex. It was a congenital deaf-mute, and he hoped to show sections of the labyrinth at a future date. With reference to the depression of Reisner's membrane, the speaker had observed that the stria vascularis looked as if it were degenerated. If so, and if its function were to secrete endolymph, then it was possible that the depression was due to a diminution in the amount of endolymph. This would not, of course, explain the enlargement of the labyrinth as a whole which Dr. Gray had described. The speaker agreed that the depression might be an artefact, but he had never seen such an appearance in normal specimens.

¹ We hope to publish Dr. Gray's remarks *in extenso* in an early issue.

Dr. LEE said that deaf-mutes were sometimes classified by alienists with degenerates, but the sections they had just seen supported their own contention that deaf-mutes were in all other respects normal individuals. Some of them, indeed, were very intellectual. To classify them with degenerates and on that account to refuse them education was therefore highly improper.

Dr. ALBERT GRAY, in reply, expressed his agreement with Prof. Urban Pritchard that the outgrowth on the stria vascularis closely resembled the tegmentum vasculosum of birds. It was possible that in the development of the human labyrinth a stage was traversed in which such a process formed. But in ontogeny a stage like this may be flurried over with such rapidity that it may escape notice, unless by good fortune it is accidentally hit. And it was possible that the disease process had set in at just such a favourable moment, stereotyping this outgrowth for the rest of the individual's life. That the depression of the membrane of Reisner was pathological and not artificial was shown by the fact that in the lower cochlear whorls the membrane was adherent to the organ of Corti. These sections showed that deaf-mutism was generally due to a labyrinth lesion, and not, as neurologists in the past had maintained, to a central defect.

DEMONSTRATION OF HAY'S PHARYNGOSCOPE.

By DR. W. MILLIGAN.

The particular advantage of the instrument is that it can be used in patients who are so ill that they cannot tolerate an examination with the ordinary throat mirror.

Dr. H. J. DAVIS observed that when using the instrument the uvula sometimes came down and hid the larynx. This difficulty could be got over by making the patient open the lips a little.

Abstracts.

MOUTH.

Samenhof, L. (Czyste).—*A Case of Acute Idiopathic Osteomyelitis of the Superior Maxilla.* "Arch. für Laryngol.," vol. xxii, Part II.

The case here reported is of great rarity, only three examples of primary necrosis of the superior maxilla having been previously recorded. The onset of the disease was sudden, with high fever, and the patient, a boy, aged three, was apparently in good health at the time. There was no suspicion of syphilis or tuberculosis. Two months after the beginning of the illness the case first came under the writer's care, and a loose sequestrum which involved the entire alveolar process of the right superior maxilla from the first molar backwards was removed. A second smaller sequestrum was removed a few days later. Careful examination showed that the antrum of Highmore was not involved. On the seventeenth day the wound was completely healed. In only one of the three cases which occur in the literature did death occur; in the other two healing quickly followed removal of the sequestrum.

Thomas Guthrie.

LARYNX.

Schoenemann (Bern).—*On the Physiology and Pathology of the Tonsils.* "Arch. für Laryngol.," vol. xxii, Part II.

The author has already published the results of extensive researches bearing upon the function of the four tonsils and the cause of the hyperplasia to which they are liable. He has reached the conclusion that the tonsils are simply the most superficially placed of the cervical lymph-glands, and that the lymphatic area which they drain is none other than the nasal mucous membrane. This view is supported by Lénárt's experiments. The latter found that insoluble granular materials injected into the nasal mucous membrane of rabbits, dogs, and young pigs under slight pressure could be detected in the tissue of the tonsils so soon as twenty-four hours later. After unilateral injection the tonsils of both sides showed granules of the material injected. Among other arguments in favour of the author's hypothesis is mentioned the well-known observation that not infrequently after operative measures in the nose a follicular tonsillitis makes its appearance.

On this view both acute tonsillitis and chronic hyperplasia of the tonsils are to be ascribed much less to local infection from the tonsillar surface than to infection brought by the lymph-channels from the nose.

Thomas Guthrie.

Rothschild, J. (Frankfurt a. M.).—*On the Etiology of Congenital Laryngeal Stridor.* "Arch. f. Kinderheilk.," vol. lii, No. 1-3.

With a brief reference to some of the theories which have been suggested as the explanation for this condition, the author gives an account of one of his own cases, for which, unfortunately, all treatment proved ineffectual.

The child was the last of a family of six, four of whom were alive and healthy, but the youngest had died of "mekena." The parents were healthy. The child was born easily and quickly, but was said to have been slightly asphyxiated at birth. At and after the second day it was noticed that the breathing was noisy, so much so that when six days old the child was brought to Rothschild, who describes it as a strong infant with a typical inspiratory stridor, which apparently during sleep at times disappeared. Nothing abnormal was detected in the throat, but the X-rays showed "a slight enlargement of the thymus shadow." The child was frequently under the author's observation, and though its condition was variable it was never quite free from the stridor, yet on the whole the breathing became less noisy and its general condition was satisfactory. When it was five and a half weeks old Rothschild was hastily summoned, and on arrival found it dead. The parents stated that it had made a whistling noise for the last two days and had been rather feverish, but as far as could be gathered there had been no dyspnea.

The *post-mortem* report was as follows: The body was in moderate condition. Thymus the size of a hen's egg, of a soft consistency, and composed of two side portions which lay beneath the corresponding lungs, and a middle lobe which was united by fibrous tissue to the sternum. The trachea was not compressed, but its mucous membrane in the lower part was injected. The lungs were congested and the bronchi contained an abundant muco-purulent secretion. The larynx was normal in size, but the mucous membrane of the aditus was injected and somewhat

swollen. On the left half of the interior of the larynx was a swelling reaching over to the opposite side in one place where it had produced a small abrasion. The swelling was fluctuant, and on incision was found to contain thick pus. The thyroid and cricoid cartilages revealed nothing abnormal, and no other point bearing on the case was noted in the remainder of the examination. The cause of death was regarded as confluent double lobar pneumonia and a submucous laryngeal abscess.

Microscopic investigation showed the abscess wall to be lined with columnar epithelium, and so on further consideration Rothschild formed the opinion that the laryngeal lesion was really a mucous retention cyst which had recently become infected, possibly following on the pneumonia, that this cyst had given rise to the stridor, and that its more or less sudden enlargement was the ultimate cause of death.

Alex. R. Tweedie.

Brewer, G. E.—*The Operative Treatment of Cancer of the Larynx.* "Annals of Surgery," vol. 1, No. 5, November, 1909, p. 820.

The article starts with a summary of the history of the surgery of laryngeal cancer, in which attention is directed (*inter alia*) to the recent statistics of Hartly and Glück, which show that with careful technique partial laryngectomy is as free from operation mortality as total laryngectomy.

Thyrotomy the author has performed seven times for cancer: one has died since the operation without recurrence; two are still alive without recurrence, five and two years after operation respectively; and in three recurrence has taken place.

Complete laryngectomy has been performed eleven times, with five deaths from the operation. His last four cases have recovered, and this he attributes to improvement in technique.

Of the six recoveries three are still alive without recurrence, from two to ten years since the operations; one was without recurrence when last seen, but has been lost sight of; one died of pneumonia four months after operation, and in one recurrence took place four months after operation.

Technique.—A preliminary tracheotomy is performed ten days before the larynx is removed, the thyroid isthmus being divided and the trachea exposed and packed around with gauze in order to create a barrier of granulation-tissue around the trachea, and so prevent subsequent retraction and descending infection.

At the major operation he begins by giving morphia, gr. $\frac{1}{6}$, and scopolamine, gr. $\frac{1}{100}$, by which the anæsthesia is facilitated and post-anæsthetic vomiting minimised.

The larynx is isolated and separated from the œsophagus in the usual way, the upper end of the severed trachea being tightly packed with gauze.

The pharyngeal wound is closed with two layers of sutures, first of plain and next of chromicised catgut.

Finally the tracheal stump is dealt with by cauterising and dissecting out its mucous membrane, iodoform gauze being used as packing above the tracheotomy tube.

By this method, as has already been said, Brewer has been able to operate upon his most recent cases without a fatality.

Dan McKenzie.

E.A.R.

Alexander, G. (Vienna).—*A Contribution to our Knowledge of Acute Labyrinthitis*. "Arch. f. Ohrenheilk.," Bd. 75, 1908, p. 1.

Four cases of a special type of labyrinthitis are described, to which the author gives the name of "labyrinthitis acuta circumscripta," and which follows the radical mastoid operation, although it is not due to surgical traumatism.

Within the first twenty-four hours after operation symptoms of labyrinthitis appeared. These were marked vertigo, with vomiting and sometimes subjective movement of external objects, spontaneous nystagmus, generally to the sound side, and in one case the typical attitude of labyrinthine disease—the patient lying on the sound side. In one or two of the cases the nystagmus, when it first appeared, was directed to the diseased side, but this quickly passed off and was succeeded by the typical nystagmus to the sound side.

After the rather violent onset, all the symptoms gradually subsided without any further operative interference, and at the end of a week the patients were perfectly well and able to get about. Spontaneous nystagmus of a slight and irregular character (sometimes to one side, sometimes to the other) alone remained as the last trace of the spent storm.

Before the operation there was no sign of labyrinth involvement, save in one case in which there was vertigo and spontaneous nystagmus to the affected side; and in none, save in one case, was there any evidence of active participation in the disease of the outer wall of the labyrinth. In the solitary exception the bony wall of the labyrinth showed signs of osteitis and was invested with granulations, which the operator curetted. In this case vertigo was experienced and nystagmus was observed as soon as the patient had recovered from the anæsthetic. In two of the cases meningeal symptoms accompanied the labyrinthitis, but they disappeared even more rapidly than the labyrinthine phenomena.

In discussing the cause of the disease the author is confident that he can exclude any traumatic breach of the external osseous wall of the labyrinth, and he is forced to the conclusion that we have here to deal with a transient serous labyrinthitis, similar to the mild and evanescent serous meningitis that occasionally follows (as in two of his cases) the performance of the radical mastoid operation.

The recovery of labyrinthine function, as gauged by the audition and vestibular tests, was complete in all four cases.

Dan McKenzie.

Leutert, E. (Giessen).—*Results of the Comparative Bacteriological Blood Examination in Mastoid Inflammation*. "Münch. med. Woch.," November 9, 1909.

The writer maintains that in 1897 he proved that osteo-phlebitic pyæmia, although occasionally seen, was so rare that it could be left out of consideration, and that high temperatures of 102.2° F. and upwards in inflammations of the mastoid, after the subsidence of the acutest stage of inflammation in the tympanum, are always an indication that there is inflammation of the whole thickness of the outer wall of the lateral sinus with intrusion of bacteria into the blood-stream, followed by thrombosis. He further considers it proved that the highest degree of destruction of the mastoid in acute and chronic suppurations, whether with or without

cholesteatoma, is never accompanied by high temperatures unless the sinus wall is inflamed in its whole thickness. He therefore holds that the diagnosis of otitic sinus thrombosis is possible on the ground of the high temperature. In relation to this, he cites two causes of difficulty in practice, although only in a small percentage of cases, namely, when there is some other diseased condition present, such as tonsillitis; and secondly, in cases in which both mastoids are affected and there is no marked difference in the appearance of the two sinuses when they are exposed. In order to clear up the differential diagnosis, he therefore makes comparative examinations of the bacterial contents of the blood from one or both sinuses, and from a vein in the arm. To this he adds, at the time of operation, investigation of the bacteria in the jugular vein. In his first work on the subject he dealt with fourteen cases, chiefly of sinus thrombosis, in which, while the blood from the arm was sterile, that taken from the sinus contained abundance of streptococci. He now adds the result of sixty-seven other examinations made in cases in which sinus thrombosis was absent as well as present, also in cases with only slight elevation of temperature. In his *first group*, the uncomplicated mastoiditides, sinus and arm blood was examined thirteen times, and in seven cases the sinus blood alone. In all of them the arm blood was sterile, and in sixteen the sinus blood as well. In two acute cases a few streptococci were found in the sinus blood, and in one chronic case the *Staphylococcus albus*. In a second chronic case there were some bacilli. In two of these four cases the sinus was exposed at the operation, and its wall found to be markedly diseased. In a third it was much thickened. Only in one of the two acute cases it appeared to the naked eye to be unchanged. These were transition cases between the uncomplicated and the second group, namely, those with high fever. From these observations he concludes that in uncomplicated mastoiditis, that is to say, without marked elevation of temperature, no bacteria get into the bloodstream. The other possibility, that bacteria entering through the small veins into the circulation get destroyed at once in the blood, is improbable, because the cultures, as long as no high temperature was present, always remained sterile independently of whether the case was acute or chronic. It is unlikely that the bactericidal property of the blood during long-standing inflammation of the mastoid can continue undiminished in strength to such an extent as to make the bacterioscopic examination of the blood always negative.

Among the complicated cases, the *second group*, he found three classes. The first contained four acute cases in which the high temperature was reduced three days after the mastoid operation. In these, blood from the sinus and the arm was sterile. The second contained eleven in which slight elevation of temperature remained after the third day. Only in three of these, which could be characterised as mild, the blood from both places was sterile. In three there were a few streptococci in the blood from the sinuss, but none in that from the arm. In the seventh case the sinus blood was sterile, while that from the arm vein gave three and five streptococcal colonies. In the eighth case there were a few streptococci in the sinus; the arm could not be investigated. In the ninth and tenth streptococci were found in both bloods. In the eleventh case, which was one of bilateral post-scarlatinal mastoiditis with slight persistent elevation of temperature, the blood of the right sinus gave on three plates streptococci with marked hemolysis, but the blood in the left sinus remained sterile. In this case it was not considered necessary to examine the arm-blood, as the result of the investigation of

the healthy sinus was equivalent to it in value. The third class embraced five cases which formed a transition towards the third group, as there was evidently a slight thrombosis formation. In the first case this was deduced from the persistence of the temperature, which only fell on the fourth day after the exposure of the sinus. It rose again from the ninth to the twelfth and continued high. Streptococci and a few staphylococci were found both in the sinus and in the arm blood, especially in the former. In the second case the temperature rose on the tenth day after the exposure of the sinus, there having been an interval of pyrexia for seven days, accompanied, further, by a high pulse. The high temperature fell, however, on the same evening, and was normal again in four days. The third case had for a long time after the exposure of the sinus slight evening rises, and on the thirty-first day after the operation inflammatory changes were found in the eyeball of the same side, namely, irido-choroiditis of metastatic nature, which went on to pan-opthalmia and led to atrophy of the eye. The two last cases, one apparently acute and one chronic, were complicated by myocarditis; the temperature in the first one, after coming down on the ninth and twelfth days following the exposure of the sinus, went up again for several days. In the first case there was abundance of *Staphylococcus pyogenes aureus* in the sinus blood, and only a few in the blood from the arm. A positive result in the arm blood is considered, therefore, to indicate a severe infection. The writer considers it quite exceptional to find even comparatively small metastases in sinus phlebitis without thrombosis, and then only in the first stages of thrombosis, and metastases in the lungs or embolism of the pulmonary artery only if portions of thrombosis become loose exceptionally early. In all his acute cases, apart from the rare ocular metastases which came on very late, metastases was absent. Even in rapidly fatal cases of sinus thrombosis metastases as a rule did not occur. He therefore concludes that the occurrence of high fever in mastoid inflammations points to the reaction of the body against the invasion of bacteria, which in these cases are generally streptococci.

While in the second group the severity of the case could be decided by high temperature, this was not possible in the *third group*, namely, those of sinus thrombosis, in which the severity was measured not alone by the height and duration of temperature but also more particularly by the presence and nature of the metastases, as also the degree of strength of the heart. In twenty-three cases the sinus blood was examined, and in ten of these at least 1000 or more streptococci occurred on one plate, while in the second group only twice were there more than 100. Of these ten cases three recovered, two died of sinus thrombosis, one of sinus thrombosis after meningitis, and one apparently of a tumour of the base of the skull after the healing of the thrombosis. In four other cases the streptococci did not number over 100 or from that to 500, and they all got well. In other five the number was under 100 and of these three recovered. One died from a recurrence of pneumonia, another from embolism of the right pulmonary artery; in other four cases the cultures from the sinus blood remained sterile with the exception of a few pseudo-diphtheria bacilli on one plate in one case. Their course was mild, but one died as the result of acute cerebellar abscess. A very advanced chronic case which was ushered in with pulmonary disease and pleurisy died, and in the sinus blood were found only three or five colonies of staphylococci. In the remaining five cases the sinus blood could not be examined as the channel contained no blood, being blocked up by thrombus. Of these five cases two died and three recovered.

He thinks as a result of a comparison between the third group and the second that we are justified in saying that the discovery of streptococci in quantity in the sinus blood is a symptom of existing sinus thrombosis, and therefore of great diagnostic importance. A small quantity of bacteria indicates a less degree of severity in the case, but the writer does not consider that the smallness of the quantity justifies the omission to tie the jugular vein and to open up the sinus, more especially if bacteria are found in the blood from the veins of the arm or foot. In long-standing sinus thrombosis the bacterial contents of the blood may diminish, as they do also when the patients sink under metastatic pulmonary abscesses. In otitic blood infection the protective power of the organism works long and energetically, so that a multiplication of streptococci in the blood itself or of the blood-forming organs does not take place.

When we compare the observations on the three great groups we find the following as the bacteriological picture during the development of a sinus thrombosis: In the mastoiditis not complicated with sinus disease and which always runs its course without high temperature, there were no bacteria in the blood. The supervention of high fever showed the passage of bacteria through the sinus wall into the blood, at first without thrombus formation, which, however, soon does occur if the diseased bone through which the inflammation reaches the sinus wall is not removed. The first bacteria which get into the blood-stream are, however, not to be demonstrated in cultures, as they are overcome at once by the bactericidal properties of the blood; only after a certain time—occasionally a short one—they grow in cultures, and in the first instance in those taken from the sinus. With increasing severity of the condition the bacteria reach the peripheral veins, though so far as the material before us permits of our deciding, generally in very small number.

Conclusions.—(1) The occurrence of streptococci in quantity in the sinus blood establishes the diagnosis of sinus thrombosis, even when, as an exception, the temperature does not rise beyond the typical 102.2° F., if, of course, there is no other pyrexial disease present at the same time.

(2) The distinct preponderance of streptococci in the sinus blood over that in the peripheral vein enables us to distinguish in doubtful cases whether the high fever depends upon the ear disease or upon some other disease, the differential diagnosis then being in favour of sinus thrombosis.

(3) If the number of streptococci in the sinus is small and they occur simultaneously in the peripheral vein, if also there is no other pyrexial disease present, the high temperature strongly suggests sinus thrombosis.

(4) A negative result in the sinus blood as well as in that of a peripheral vein does not necessarily exclude sinus thrombosis, as in isolated thrombus of the jugular bulb a culture may give a negative result if we do not puncture very low down, even though thrombosis may be present. In such cases we are dependent upon the temperature alone; nevertheless we may wait one or two days longer than has hitherto been customary before performing the sinus jugular operation. If we are in doubt as to whether the high temperature is to be attributed to the ear we can repeat the exploratory puncture at a different and lower spot, though only in quite recent cases. In older cases the bacterial contents may diminish very considerably as the result of the breaking-down and the annihilation of the thrombus, but then the clinical nature of the disease is indicated by a metastasis.

(5) If there is a possibility of disease of both sinuses we should take

first the one in which alone streptococci are found, or at least in which they are found in the larger number.

(6) If the number of streptococci in both sinuses is not very different and that in the peripheral vein extremely small, we have probably to deal with bilateral sinus thrombosis.

(7) The presence of metastases points, as a rule, to sinus thrombosis of some duration.

Dundas Grant.

REVIEWS.

Accidental Injuries to Workmen, with Reference to Workmen's Compensation Act, 1906, by H. NORMAN BARNETT, F.R.C.S.; with article on *Injuries to the Organs of Special Sense*, by CECIL E. SHAW, M.A., M.Ch., M.D.; and *Legal Introduction*, by THOMAS J. CAMPBELL, M.A., LL.B. London: Rebman, Ltd., 1909.

Mr. Norman Barnett's book on accidental injuries to workmen, with reference to the Workmen's Compensation Act of 1906 is invaluable to every general practitioner, as there are few who have not at some time or other to give evidence and opinions in regard to these circumstances. They are dealt with both from the legal and the medical points of view, and are illustrated by numerous cases taken from actual reports of the legal proceedings. Most of the disturbing conditions are dealt with, such as the modifying effects of disease, while the making of reports and the giving of evidence will certainly be facilitated by the study of Chapter IV. In Chapter V, in which are considered industrial diseases as accidents, there is a short and pithy account of the more important dangerous trades. The injuries to different parts of the body are taken in sequence, such as bones, joints, muscles, tendons and bursae, blood-vessels, internal organs, the nervous system, and, in Chapter X, the organs of special sense. This chapter is written by Dr. Cecil Shaw, lecturer on ophthalmology and otology at Queen's University, Belfast, who is therefore well able to deal with the subjects. The section on injuries to the ear is of special interest to us, and, although short, it indicates the main points and the main lines of investigation. It would, however, be improved by amplification, but the specialist will find it a good guide and will probably have no difficulty in supplying for himself the amplification which we have desiderated. The paragraph on simulated deafness is ingenious, and contains a test which might well be added to those in the usual text-books on diseases of the ear. Some of our readers may be acquainted with the very extensive monograph on injuries of the organ of hearing by Professor Passow, and also a work entitled "Aerztliche Obergutachten aus der Praxis eines Ohren-, Nasen und Halsarztes," by Dr. R. Dahmer, of Posen. The latter contains a number of cases selected from those which the author has had to prepare in reference to such matters as public life insurance, workmen's insurance, trades unions and accidents. They illustrate very strikingly the class of circumstances in which the specialist in diseases of the throat, nose and ear, may be called upon to give opinions of the utmost importance, and a perusal of the cases which the author here narrates cannot fail to be both interesting and instructive to his colleagues. Among them we naturally find cases in which the patient professes to have lost his hearing as the result of some slight injury. It need hardly be said that the methods of circumventing

simulation and exaggeration and of detecting genuine injury take a very prominent place in this branch of the author's work; the practitioner who has studied the cases here described will be all the more able to meet the difficulties attached to them when they arise. Röpke's volume on injuries of the nose is now several years old, but full of information on the subject. With the other works for reference and with Mr. Barnett's work for application to litigation, the specialist's library on the subject may be considered complete. The English work in question is well printed, easy to read, and altogether acceptable.

Dundas Grant.

Geschichte der Laryngologie an der Universität Heidelberg [History of Laryngology in the University of Heidelberg]. By Dr. A. JURASZ. Würzburg: Curt Kabitzsch, 1908.

Professor Jurasz, in his introduction, describes his initiation into active laryngology in the year 1874, when Professor von Dusch handed over to him a patient whose hoarseness was due to a polypus in the anterior commissure. After a little practice as "auto-didact" the writer was able to remove this polypus, and the result of the case led other sufferers to resort to him for assistance. The department for diseases of the throat was then started and continued under Professor Jurasz up till the last two years. During all this time the name of the professor was increasing in reputation, and glory was added to the University of Heidelberg. Owing, however, to various circumstances, among which we may class pure human nature, the physicians and surgeons who had beds in the hospital could never be induced to hand over to him even a few for the purpose of an in-patient department for diseases of the throat. Professor Jurasz was, therefore, seriously handicapped in his endeavours to perfect his department, and those who have the interests of laryngology at heart cannot but regret that from him were withheld the opportunities of employing his special labour and talents to their best advantage. A change has, however, been effected, and Professor Jurasz has transferred his energies to a new sphere of usefulness, namely, the University of Lemberg. He has now beds at his disposal and ample material for the exercise of his ability. The "passing" of the department of laryngology in the University of Heidelberg is now an established fact, and it has been made an item in the department for otology. Although the writer of this notice, along with the majority of his *confrères*, practises at the same time laryngology and otology, he is strongly in sympathy with those who insist that in a large school, and particularly a university, there should be separate chairs and departments for these two branches of medical science, in order that each may be developed to its fullest extent in the directions in which they diverge from each other. At the same time in the admirably equipped and richly housed department of otology in Heidelberg, under the well-known guidance of Professor Kümmel, there is no doubt that progress will be made, though we scarcely think it will be so great in the department of laryngology as if the desired facilities had been afforded to Professor Jurasz, with whom Professor Kümmel was in the fullest collegial sympathy and harmony.

The author gracefully appends to this history, when leaving the scene of his long and active endeavours, the cordial wish that laryngology may there suffer no loss in its union with otology, but on the contrary that it may still further develop, prosper, and flourish, to the advantage of science and of the students, for the benefit of those seeking its aid, and

for the glory of the beautiful town on the Neckar, the venerable Ruperto-Carola, and the whole country of Baden.

"The History of Laryngology in Heidelberg" is intensely interesting sure that its publication would do a great deal of good. We heartily join from the technical, academical, and political points of view, and we are with Professor Jurasz in the good wishes he expresses towards his late *alma mater*, and many who have enjoyed Professor Jurasz's cordial hospitality in Heidelberg will always miss him when they again visit that town. While regretting the distance to which he has moved they will look forward with interest to seeing the result of his work under the favourable circumstances in which he is now placed, and in which the good wishes of all laryngologists will accompany him.

Dundas Grant.

Clinical Manual for the Study of Diseases of the Throat. By JAMES WALKER DOWNIE, M.B., F.F.P.S.G. Second edition, with 104 illustrations. Glasgow: James Maclehose & Sons, 1909.

The work now before us is a good specimen of the highly creditable contributions to our specialty which have issued from Glasgow. Dr. Walker Downie gives, in 432 well-printed pages, an excellent account of the diseases of the pharynx, larynx and naso-pharynx, his directions for examination containing valuable practical hints. His views are expressed clearly and resolutely, and in some instances he differs very considerably from the generality of his *confrères*. Thus in cases of multiple papillomata of the larynx his strong advocacy of thyrotomy is quite exceptional. He is very doubtful as to our being able to depend on the spontaneous disappearance of the growths after tracheotomy. Naturally he does not offer extensive personal statistics, but he describes several cases in which thyrotomy enabled successful treatment to be carried out. In one of his cases the operation had to be repeated six times. The chapter on tuberculosis is a good sample of that lucidity and conciseness which characterises the whole work. Treatment by intra-tracheal injections of menthol and guaiacol are very strongly recommended. Diphtheria is described in an equally good chapter, the summary of the treatment in the paragraphs on pages 344 and 345 being peculiarly terse. One of the most striking features is the beauty of the pictures in colour of many of the diseases of the pharynx and larynx, which will make the book exceptionally helpful to the practitioner as well as useful to the teacher.

Dr. Walker Downie's explanation of aprosexia by post-nasal adenoids (p. 154) is worthy of consideration. He points out that the effort of attention coincides with a fixation of the muscles of the chest, closure of the glottis, and an act of contraction of the muscles of respiration. When, however, the respiratory difficulties are present, the ability to fix the attention is difficult or impossible, according to the degree of obstruction. The removal of the post-nasal obstruction renders the inhibitory action necessary to voluntary attention possible. One omission, which, in our opinion is rather a serious one from the practical point of view, is a description of tracheal stridor as such as distinguished from laryngeal stridor. In such a complete and practical work we trust the author will supply this in his next edition.

The writing of the book makes it, as we have found, most attractive and easy to read. The style is simple but elegant, and the split infinitive on the twentieth line of page 358 will be forgiven on account of its solitariness. The paper, printing, and handiness of the volume call for the greatest praise for the house of Maclehose.

Dundas Grant.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

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THE PROBLEM OF LATENT DIPHTHERIA.

IN the authoritative papers upon latent infections of the diphtheria bacillus read at the meeting of the British Medical Association at Belfast, in July of last year, by Drs. Watson Williams, R. M. Buchanan, and Duncan Forbes, now appearing *in extenso* in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, our readers are afforded an opportunity of studying in detail an exhaustive and interesting presentation of the latest investigations upon a subject which, in recent years, has assumed very considerable importance, not only to the epidemiologist and laryngologist, but also to the general practitioner.

As practical clinicians our first impulse, naturally, is to inquire what the authors of the articles have suggested in the matter of the treatment of those persons who harbour diphtheria bacilli in a "latent" form. Is there any means whereby we can promptly evict the unwelcome tenants? Unfortunately, the answer to this question is in the negative. No specific and certain method of removing these organisms from their habitat has, so far, been discovered. The diphtheria antitoxin, no doubt, prevents or annuls their deleterious influence upon the living tissues of the host, but it does not possess the property of destroying or expelling the organisms themselves, and for this reason, as a means of shortening the period during which a latent case may be infectious, it is of little or no value.

With reference to the action upon the diphtheria bacilli of the direct application of bactericides to the mucous surfaces Dr.

Watson Williams observes that although the infectivity of the organisms may be diminished while antiseptics are being used, the period of their infectivity is not thereby shortened in the slightest.

The disappointment we naturally experience when we become acquainted with the lack of success that has attended these experiments is counter-balanced, however, by one or two considerations of not a little importance. First of all, there seems to be a fairly general agreement that the infecting potentiality of the diphtheria bacillus in a latent case is very low. This opinion is supported by an examination of Dr. Buchanan's diagrams graphically depicting the association of fully-formed diphtheria with the latent type of the disease, in which the most striking feature is the comparative sparsity of possibly infected cases—only one or two children in the neighbourhood of each latent case being attacked. Further confirmation of the inferences we draw from these diagrams is supplied by the remark that, in the experience of public health authorities, "return" cases of diphtheria are by no means common.

Another set-off to the ineffectual character of the treatment of latent diphtheria is afforded by the fact that the length of time the diphtheria bacillus can remain in residence is, at the most, limited to a few months. In this respect the organism of diphtheria stands in marked contrast to that of typhoid fever, which, as recent experience has shown, may, and often does, continue to lead a quiet parasitic life within the organs of the "carrier" for many years, sometimes, indeed, for a lifetime.

Another curious and important point specially referred to by Dr. Buchanan is that the diphtheria bacillus in a latent case is comparatively innocuous both to its host and to the community in general, unless an additional infection by some other organism occurs, and then its virulence and infectivity are enormously enhanced. Hence the advisability of isolating cases of simple sore throats during a diphtheria epidemic.

It should be noted in passing that the virulence test upon guinea-pigs, while it serves to determine the specificity of a given strain of organisms, affords no indication whatever as to their capabilities of infection.

The advance reflected in the articles we are now discussing exemplifies the truism that with each forward step in knowledge new problems emerge from obscurity and demand solution. It is possible, for example, to explain the fact of latency by assuming the presence of an autogenous antitoxin, but we are not yet able to account for the fact that in some individuals diphtheria bacilli

take up their residence as non-pathogenic organisms, while in others they entirely fail to effect a lodgment at all. In like manner the agency which determines the final disappearance of the organisms is at the present time also unknown to us. The solution of this problem, when it is completed, will doubtless furnish us with the clue to the successful treatment of latent diphtheria.

In conclusion, we venture to offer our thanks to the authors for their instructive and thought-provoking articles, and to express our hope that they will carry out their intention to issue the several papers bound together in one single brochure.

DISCUSSION ON THE LATENT INFECTIONS BY THE DIPHTHERIA BACILLUS AND ADMINISTRATIVE MEASURES REQUIRED FOR DEALING WITH CONTACTS.

BY R. M. BUCHANAN, M.B., F.F.P.S.G.,
City Bacteriologist, Glasgow.

THE discussion which I have the honour of introducing to-day from the bacteriological standpoint deals with only a small part of a very large subject. In the latent infections by the diphtheria bacillus and administrative measures required for dealing with contacts we have in essence to discuss what has come to be recognised as one of the sources of diphtheria infection and the problem of dealing with it.

The great tide of experimental research that flowed from the discoveries of Pasteur and Koch gradually swept away much of the mystery enshrouding infection and its spread from individual to individual. And one of the earliest and happiest achievements in this way was the finding of the germ of diphtheria by Klebs in 1883 and its isolation by Loeffler in the following year. In the quarter of a century which has elapsed the work on diphtheria has been an embodiment in a sense of the modern spirit of research and scientific achievement.

It is interesting to find in the classical work of Loeffler a foreshadowing of the very difficulties that confront us to-day. He obtained the organism in pure culture from a number of cases, but did not find it in all the cases regarded clinically as diphtheria. What further tried his belief in the specificity of the newly discovered bacillus was the fact that he found it in the throat of a

healthy child. At the very outset, therefore, we see in operation the problem with which we are here and now specially confronted. But the significance of these things we now more clearly comprehend, having come to recognise that all sore throats are not diphtheria, and that healthy persons may carry the bacillus in their throats as a latent infection.

LATENCY OF INFECTION.

This capacity of infection to be latent has been investigated in the past few years. The term "latency" as applied to infective agents is one to which we have not yet grown accustomed, and is one to which a definite meaning has not yet been attached by common consent. It suffers from the objection that it tends to involve two conceptions in confusion, namely latent disease and latent infection. At the same time it must be frankly admitted that the demarcating line between what is called latent infection and latent disease is very hard to fix. Latent infection may therefore be regarded from the bacteriological standpoint as the presence of an infective agent unaccompanied by any obvious pathological change. It may even be said that in every part of the body there is latent infection, in other words, infective agents which are only held in check by what we call vital resistance on the part of the tissues or diminished virulence on the part of the specific microbe. In this sense, when an individual harbours a well-defined pathogenic germ without betraying its presence by any symptoms, such an individual has come to be regarded as a carrier of infection and in that respect a potential danger to his fellows.

The experience of recent years has given some bounds to the distribution of the diphtheria bacillus. It has been ascertained that the cases admitted to hospital as diphtheria include a very large number of individuals with no bacteriological evidence of diphtheria. The results of the bacteriological examinations of 30,000 certified cases quoted by Graham-Smith showed that the bacillus was present in only 71 per cent. My own experience of systematic examination of a series of hospital cases numbering 128 showed that bacteriological evidence of diphtheria was present in only 76 per cent.

Again, the specimens presented for diagnosis in the routine work of a bacteriological laboratory afford a relatively small proportion of positive results. Since this work was inaugurated in the Public Health Laboratory of Glasgow nine and a half years ago fully 9935 specimens have been submitted, and only in 31 per cent. was a

positive result obtained. The clinical evidence, therefore, of the distribution of the diphtheria bacillus is very indefinite, and renders the diagnosis of the disease apart from bacteriological methods difficult and uncertain. If these facts have had a disturbing effect on clinicians and unsettled the clinical conception of the disease, the distribution of the bacillus in healthy persons has in like manner revolutionised our ideas of its epidemiology.

TYPE, VIRULENCE AND PERSISTENCE OF THE BACILLUS IN THE
CLINICALLY UNAFFECTED.

Type.—The identification of the diphtheria bacillus in routine diagnostic work may be said to depend on the morphological characters of the organism. The exigencies of the work demand expedition, and while this may be at the expense of accuracy in a small proportion of cases, it is to be borne in mind that it is the only method as yet available to meet the requirements of prompt administrative action. At the same time it is quite understood that morphology in itself is not sufficient to place the recognition of the bacillus beyond doubt, and that it is necessary for this purpose to resort to cultural and inoculation tests involving four to six days as a minimum period of time.

The great variety of forms presented by the diphtheria bacillus in cultures from the throat has led to repeated attempts to arrange these forms in definite classes or types. The result has been that each observer has evolved a classification of his own—an indication that the problem is a difficult one and that the interpretation of morphological characteristics is a matter into which the personal equation of the trained observer largely enters. Nevertheless, morphological classifications of an organism possessing such a wide range of polymorphism are essential even though they are to some extent arbitrary, serving the useful purpose of facilitating description.

The strains of bacilli from different individuals, whether cases or contacts, show slight differences of form, which differences they tend to maintain throughout residence in the throat. Thus the form may be uniformly cylindrical with deeply staining round or oval terminal granules, and the rod may be of different length in different cases. On the other hand the form may be slightly curved, more or less cuneate, and very irregular in size and staining. A search in such a cuneate growth, however, seldom fails to reveal some cylindrical forms, more or less typical.

In addition to this apparent prevalence of the cylindrical or cuneate form in individuals there has been found something like a seasonal variation, inasmuch as the cylindrical form, while it may prevail throughout the year, appears to predominate in winter, and the cuneate form in summer. On this point, however, further observation is necessary.

While recognising these as the two chief types in which the bacillus is met with in cultures, other forms are frequently seen in the same culture and in different cultures which appear as further modifications of the bacillus induced by environment. Thus there are spindle forms described by Eyre as the "sheath bacillus," tapering to a point at either extremity and having in its centre a mass of deeply stained protoplasm, forms in which the protoplasm is beaded or barred, and elongated clubbed forms with one or both ends swollen and suggesting arrested cell-division. There is evidence to show that multiplicity of form is largely due to the influence of the artificial nutrient medium. How much morphology is influenced by the human body, by season, and by locality has still to be determined.

Some types at least can be produced at will in artificial cultures by using different media. Taking a strain of the bacillus for example, ox serum with saccharose produces in eighteen hours cylindrical forms only (Fig. 1); ox serum with glucose produces cylindrical and cuneate mixed (Fig. 2); a mixture of serum-water (Hiss) and nutrient agar (equal parts) produces all spindle forms (Fig. 3); serum-water (Hiss) and 1 per cent. agar produces very short forms resembling Hofmann's bacillus (Fig. 4); and ordinary nutrient agar produces many spindle and short forms (Fig. 5).

With the view of giving support to bacteriological diagnosis based on morphology, various culture tests have been devised, but hitherto they have been attended with the disadvantages of delay. The use of media containing different sugars with an indicator to show the presence or absence of acid production has given the best results. I find that a fluid medium which is a modification of Hiss' serum-water gives excellent and rapid results. It is made by coagulating ox serum in an equal quantity of water, filtering, adding to one half 1 per cent. glucose and to the other half 1 per cent. saccharose, and tubing—using neutral-red as an indicator. In twenty-four hours a marked acid reaction is produced in the glucose tube by *Bacillus diphtheriæ*, in both the glucose and saccharose tubes by *Bacillus ærosus*, while no change is produced in either tube by the bacillus of Hofmann.



FIG. 1.—*B. diphtheriae* on ox serum with saccharose (18 hours). $\times 2000$.



FIG. 2.—*B. diphtheriae* on ox serum with glucose (18 hours). $\times 2000$.



FIG. 3.—*B. diphtheriae* on serum water (Hiss) and nutrient agar, equal parts (18 hours). $\times 2000$.



FIG. 4.—*B. diphtheriae* on serum water (Hiss) with 1 per cent. nutrient agar (18 hours). $\times 2000$.



FIG. 5.—*B. diphtheriae* on ordinary nutrient agar (18 hours). $\times 2000$.

Morphological varieties of one strain of *B. diphtheriae* on various culture media.

TO ILLUSTRATE DR. R. M. BUCHANAN'S INTRODUCTION TO THE DISCUSSION ON THE LATENT INFECTIONS BY THE DIPHTHERIA BACILLUS AND ADMINISTRATIVE MEASURES REQUIRED FOR DEALING WITH CONTACTS.

*Virulence of Bacillus diphtheriæ Isolated from Contacts
and Clinical Cases.*

Year.	Contacts.		Patients.	
	Examined.	Virulent.	Examined.	Virulent.
1906 . .	—	—	2	2
1907 . .	6	2	23	15
1908 . .	9	7	24	19
1909 (6 mos.) .	6	5	9	7
	—	—	—	—
	21	14	58	43
	= 66 per cent.		= 74 per cent.	

Virulence.—The virulence of the diphtheria bacillus in apparently healthy subjects, whether designated contacts or carriers, is only slightly less than the virulence of the organism in patients. Since the beginning of 1907 the virulence of the bacillus from twenty-one contacts has been tested by the inoculation of guinea-pigs, with positive results in 14, or 66 per cent. The test as applied to the bacillus isolated from fifty-six patients in the same period showed virulence in 74 per cent.

It is important to remember that the *Bacillus diphtheriæ* is most tenacious of its virulence. Attempts have been made by a number of observers to reduce the virulence of the organism by the usual means of heating, drying, and prolonged cultivation, without any conspicuous success. On the other hand, it is possible to increase the virulence of a particular strain experimentally. We have, then, to deal with a microbe that does not readily lose the quality of virulence, and that shows the capacity of recovering it to some extent in the event of attenuation.

Persistence.—When the bacillus gains a lodgment in the throat it appears to remain for a varying length of time whether it produces disease or not. The period of residence of the organism in the sick and the healthy is probably determined by the same factor; at any rate the presence of the morbid process while producing antagonism to the toxin has apparently no effect on the vitality or virulence of the bacillus itself. This is further exemplified in the futility of antitoxin administration as a means of getting rid of the bacillus. It is further to be remembered that the duration of persistence is not influenced by age, sex, season, or throat lesion.

This persistence of the organism in convalescents has been the subject of much investigation, and all observers are agreed that they disappear in the majority of cases well within the usual six

weeks of isolation. Beyond this time there is a varying residuum of cases, difficult to estimate in amount but ranging from 1 to 10 per cent., which retain the bacillus for longer periods. A comparison of clinical cases and contacts reveals the fact that there is no marked difference between them in the average period during which the bacillus is harboured in the throat.

Taking thirty-three clinical cases followed out till the disappearance of the bacillus (one or more negative examinations—consecutive examinations not being always obtainable) it was found that the average period was twenty-two days. On the other hand, twenty-seven contacts similarly gave an average period of eighteen days. These observations are much too limited to found upon, and only serve to draw attention to the fact that the residence of the bacillus in the throat is much the same whether attended by clinical symptoms or not.

Table Showing the Actual Duration of the Persistence of the Bacillus in Clinical Cases and Contacts.

Period of persistence of bacilli in weeks.	Clinical cases.	Contacts.
1 . . .	1 . . .	4
2 . . .	15 . . .	8
3 . . .	2 . . .	6
4 . . .	3 . . .	4
5 . . .	7 . . .	2
6 . . .	2 . . .	3
7 . . .	1 . . .	—
8 . . .	— . . .	—
9 . . .	2 . . .	—
—	—	—
	33	27
Average period . . .	22 days . . .	18 days
Over 6 weeks . . .	9 per cent. . .	—

The observations of Cobbett and Graham-Smith¹ strongly emphasise this fact. In a table constructed by the latter the mean period for notified cases was 31·6 days for virulent bacilli and 18·5 days for non-virulent bacilli, and for infected healthy contacts 36·4 days for virulent bacilli and 30 days for non-virulent bacilli.

INFECTION IN CONTACTS AND SCHOOL CHILDREN AND ITS FREQUENCY.

Contacts.—The systematic examination for evidence of *Bacillus diphtheriæ* in persons who have been in more or less intimate

¹ "The Bacteriology of Diphtheria," 1908, p. 421.

contact with cases of diphtheria has now become a recognised preventive measure in Public Health Administration. It has been in operation in Glasgow for over three years. The number of examinations during that time has been 2305, with a positive result in 211, or a little over 9 per cent.

Year.	Diphtheria contacts examined.	Number found positive.	Percentage positive	Test of virulence.		
				Number tested.	Positive.	Negative.
1906 (10 mos.)	322	34	10.5	0	—	—
1907	692	48	6.9	6	2	4
1908	841	78	9.2	9	7	2
1909 (6 mos.)	450	51	11.3	6	5	1
	2305	211	9.2	21	14	7

School Children.—There have been few opportunities of examining outbreaks of diphtheria in schools and institutions. In the few instances that have occurred bacteriological examination of the contacts revealed those who harboured the diphtheria bacillus in close association with the clinical cases. I am indebted to Dr. Chalmers and to his assistant, Dr. Wm. Wright, for the information contained in the following presentations of the spread of infection in two public schools in which the localisation of the infected scholars and contacts can be seen at a glance.

In H. School there were forty-five pupils, seated two at a desk,

H. PUBLIC SCHOOL (INFANT DEPARTMENT).

Situation of Clinical Cases (6) and Infected Contacts (4) in Room No. 11. (Two scholars at each desk.)

⊕ 26/1					
x 17/1	x 19/1				⊕ 26/1
x 14/1	x 17/1		⊕ 26/1	x 18/1	
	⊕ 26/1				
		x 27/1			

x Clinical case. ⊕ Infected contact.

(45 scholars; 45 examinations [by swab]; 4 +.)

T. S. PUBLIC SCHOOL (INFANT DEPARTMENT).

Situation of Clinical Cases (5) and Infected Contacts (3) in Classes 5 and 6.

(153 scholars; 13 swabs; 3 contacts +.).

CLASS 5.

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="x"/> <input type="text" value="x"/> 15/10 21/10	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="x"/> 16/10	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text" value="⊕"/> <input type="text" value="⊕"/> 23/10 23/10	<input type="text"/>	<input type="text"/>

CLASS 6.

<input type="text" value="⊕"/> 23/10	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text" value="x"/> 16/10	<input type="text"/>	<input type="text"/>	<input type="text" value="x"/> 11/10
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

x Patient.

⊕ Infected contact.

producing six clinical cases and four infected contacts. Here we have an illustration not only of the close range of the infection, but of the success of the bacteriological method in tracing down infection to its source. In T. S. School the same close association is apparent between clinical cases and infected contacts.

THE RARITY OF RETURN CASES: SIGNIFICANCE.

The carriage of infection by patients who have recovered and have been discharged from hospital is well recognised, but, speaking generally, the experience of the fever hospitals in Glasgow is that the spread of infection in this way appears to be very limited.

In the last three and a half years the return cases of diphtheria have amounted to thirty, giving an average of 8.5 per annum. On the total cases admitted to the hospital in that time this only represents a percentage of 0.8—which is just five times less than the percentage of return cases in scarlet fever. It is interesting to observe that the period in which infection takes place from the return cases which I have cited ranges from one to forty-three days, and averages twelve days. In scarlet fever, which may be mentioned by way of contrast, this average period is found to be seven days.

Taking four families in which there were return cases this year an analysis shows that the number of days between date of return from hospital of first case and the sickening of the second case was 32, 6, 9, and 1. In the Mason family (1) it will be observed that there is a very clear case of infection, but delayed for about a month. In the Hogg family (2) two return cases resulted from a first case harbouring the bacillus (virulent) in both throat and nose. In the Barclay family (3) we have one clinical case and three contacts infected from the first case affording another example of nasal infection. In the Bannerman family (4) the first was a missed case which gave rise after more than a month to two clinical cases, one of whom in due time brought back the infection from hospital to a child in a neighbouring family. These cases may be said to stand in the same relation to the community as infected contacts.

RECORD OF RETURN CASES OF DIPHTHERIA.

Year.	City fever hospitals.
1906 . . .	12
1907 . . .	4
1908 . . .	6
1909 (6 months) . . .	8
	—
	30

This represents 0.8 per cent. of the cases admitted to hospital.

Return Case 1.—Mason Family.

Name.	Age.		1909.
James Mason .	9 .	Hospital .	February 3.
		Dismissed .	March 27.

Contact Swabs.

Mrs. Mason . . .	—	Negative	February 6.
Charles Mason . .	7	"	"
Charles Mason . .	7	Positive	April 28.
Mrs. Mason . . .	—	Negative	May 3.
James Mason . . .	9	"	"
William Mason . .	5	"	"
Bertie Mason . . .	3	"	"
Baby	$\frac{6}{12}$	"	"

Return Case 2.—Hogg Family.

Thomas Hogg . . .	3	Sickened	March 18.
		Hospital	March 22.
		Discharged	May 1.
Helen Hogg . . .	5	Sickened	May 7.
		Positive	May 8 (vir.).
		Hospital	May 8.
Mrs. Hogg	30	Sickened	May 9.
		Hospital	May 12.

Swabs from Thomas Hogg.

Throat	Positive	May 8 (vir.).
Right nostril . .	"	"
Left "	"	"

Return Case 3.—Barclay Family.

William	—	Hospital	March 23.
		Dismissed	May 1.
David	—	Sickened	May 10. } Return
		Hospital	May 11. } case.

Contact Swabs (including Wm. Barclay).

Andrew Barclay . .	34	Negative.
Mrs. Barclay . . .	31	Positive (virulent).
Theodora Barclay .	13	" "
Andrew Barclay . .	11	Negative.
William Barclay (nose) .	4	Positive (virulent).
(throat)		Negative.
James Barclay . . .	$\frac{13}{12}$	"
Samuel Barclay . . .	$\frac{13}{12}$	Positive (virulent).

Family of 8 = $\left. \begin{array}{l} 2 \text{ clinical cases.} \\ 3 \text{ positive contacts.} \end{array} \right\}$

Return Case 4.—Bannerman Family.

Jeanie Bannerman	. 14	. Sickened	. March 27.
Margt. Bannerman	. 9	. „	. April 6.
Ina Bannerman	. 7	. „	. April 4.
		Positive swab	April 8.

Contact Swabs.

Mary Bannerman	. 41	. Negative	. April 9.
John Bannerman	. 12	. „	. „
Arch. Bannerman	. 11	. „	. „
George Bannerman	. 3½	. Positive	. „
David Bannerman	. 2½	. Negative	. „
George Bannerman	. 42	. „	. April 29.
John Bannerman	.	. Sickened later	. April 22.
George } Ina }	Discharged from Belvidere, June 9, 1909		{ Positive, June 14. Negative, „

Return Case.

Jeannie Carse	. . Sickened	. . June 10, 1909.
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THE QUESTION OF THE INFECTING POWER AND THE SEGREGATION OF CARRIERS.

The infecting power of a positive contact or carrier appears to be very limited, as has already been indicated in connection with return cases and school children. In the school children we see, as it were, the infection of the contacts, but very little evidence that they in turn passed on the infection to others. In this connection it may be observed that infected contacts rarely develop the disease themselves—a fact which accords remarkably with my experience of cerebro-spinal fever contacts, 26 per cent. of whom were positive without in a single instance developing the disease.

The positive contact's power to infect has been amply demonstrated, but it must be admitted that the accident is much more seldom than might be anticipated from the large proportion of infected contacts in the community. The number of possible infectors is also considerably reduced when we consider that it is only likely to be persons harbouring virulent bacilli that are capable of infecting others with disease-producing bacilli.

Segregation of Carriers.—In a disease of such a short period of incubation and rapid clinical course, the development of prophylactic measures is always a matter of importance. The segregation

of infected contacts and other carriers of infection has accordingly aroused the keenest interest and even controversy, for however desirable it may appear in theory it is attended with much difficulty in practice. Any hard and fast procedure is not warranted from our present knowledge of the subject bacteriologically, nor, so far as I can gather, from clinical experience.

ADMINISTRATIVE MEASURES REQUIRED FOR DEALING WITH DIPHTHERIA CONTACTS.

BY DUNCAN FORBES, M.D.,
Medical Officer of Health, Brighton.

THE clinical and bacteriological aspects of latent diphtheria infections having been ably brought before you it only remains for me to deal with the matter from the administrative point of view.

Legal Powers.—All administrative action depends to some extent upon legal powers, and the first essential is to have clearly before our minds how far one can legally proceed.

Section 126 of the Public Health (England) Act 1875 and Section 56 of the Public Health (Scotland) Act 1897 give powers with regard to—"Any persons who while *suffering from* any dangerous infectious disorder expose themselves," etc. Section 52, Part 4 of the Public Health Acts Amendment Act 1907 is as follows: (1) "If any person knows that he is *suffering from* an infectious disease he shall not engage in any occupation—unless he can do so without risk of spreading the infectious disease."

In each of those sections and in others relating to infectious disease it is specified that the person must be "*suffering from*" the infectious disease, and *prima facie* definite illness seems to be implied. A strict interpretation of the words "*suffering from*," however, might lead to awkward consequences. In our fever hospitals many cases of scarlet fever and diphtheria are detained, not because there is any clinical manifestation of disease, but because in our opinion they remain in an infectious condition. If any such patient left hospital against advice, prosecution would probably follow although he is not suffering from the disease. When one remembers that the diphtheria carrier is, like the above-mentioned fever patient, in an infective state, although not suffering from the disease, one considers that legal powers are equal with regard to the two classes. As a matter of fact one takes no action

excepting peaceful persuasion with healthy diphtheria carriers. This is not only because of the weakness of the legal position but because no difficulty is experienced in having a large majority of known cases isolated, the few who refuse to take precautions being after all only a small percentage of diphtheria carriers at large. The more dangerous of those few are school children, and one always excludes such carriers from school and in this way considerably reduces their infective powers (Public Health Amendment Act, 1907, Sec. 57, or other powers). Hitherto one has talked of healthy carriers who have had no illness; in carriers, on the other hand, who have a history of *recent sore throat or cold*, one makes an effort, usually a successful effort, to get the general practitioner to notify. One works on the theory that diphtheria carriers with sore throat or nasal catarrh are much more infectious than healthy diphtheria carriers. Up to the present one has always been successful in having such cases fairly well isolated.

In concluding what has to be said regarding the legal aspect one would hope that in future Acts the word "*suffering*" will be omitted and be replaced by the phrase "*in an infective condition*." This would give the necessary discretionary power to medical officers of health and clear away the present ambiguity.

The next matter of general interest is the taking of swabs. In a majority of cases swabs from the throat only are taken. Graham Smith¹ gives a table showing the proportion of persons affected with morphologically typical diphtheria bacilli in the nose, the throat being free, according to which 1.9 per cent. of contacts in schools had the nose infected while the throat was free.

Consideration of such a table as the above should convince anyone of the necessity of taking swabs from both throat and nose. In this connection the obvious fact that diphtheria bacilli lying on tonsils have much fewer chances of passing to another person than bacilli on the nasal mucous membrane should be considered. Up to the present too little attention has been given to the probability that nasal diphtheria is much more infectious than throat diphtheria.

During the taking of swabs a careful study should be made of the parts from which they are taken. This is especially so in the nose; one cannot fail to see one-sided nasal soreness and naturally inquires as to the presence of blood-stained secretion (these signs arouse grave suspicion), but one may easily miss fibrinous rhinitis if one does not examine the nose carefully. The membrane or

exudate in many cases of fibrinous rhinitis is crowded with diphtheria bacilli; but if one does not rub the swab on the membrane in such cases one may find no diphtheria bacilli in the culture; apart, therefore, from the risk incurred by not having such cases isolated at once,¹ there is the additional chance of no diphtheria bacilli being found in the culture and the case being missed altogether. Where much secretion is coming from the nose this should be wiped away before the swab is applied to the mucous membrane. It has frequently been found that the swabs from the secretion contain no diphtheria bacilli whilst swabs direct from the mucous membrane do. In taking throat swabs, if a spatula is not objected to it should always be used, the swab being applied to the tonsils and adjacent parts only; in children who are afraid, however, a more satisfactory swab is got without the tongue depressor, the doctor being better able to control the movement of the child's head.

A practical question which sometimes leads to friction is on whom should devolve the duty of taking swabs.

. My routine has been to personally take swabs in the school, to take swabs also from absentees at their own homes who were not at the time being attended by a doctor. In cases notified from public dispensaries the dispensary doctors usually prefer one to take any necessary swabs from other members of the family. In practically all other cases the general practitioner is asked to take swabs.

The administrative measures for dealing with contacts depend on the situation of the primary cases. A few examples are given.

(1) *Primary Cases in a Ward of a Hospital for Children.*—In such cases the immediate orders are:

- (a) Keep all patients in bed.
- (b) Keep the same staff on duty.
- (c) Admit no new cases.
- (d) If possible exclude visitors.

(e) Use no donche or spray until after the swabs have been taken. Having thus prevented in great measure contact between the infected and non-infected, one proceeds to swab the patients and staff. All patients found to be diphtheria carriers are isolated.

If one could regard the swab result as an infallible guide one would at once admit fresh cases to the ward, but in ordinary

¹ In the presence of diphtheria, cases of fibrinous rhinitis or of unilateral sore nose in contacts should be isolated at once without awaiting the swab results.

practice one discharges all cases as quickly as possible, cleanses the ward, and reopens it for fresh cases.

(2) *Primary Cases in the Home*.—If one takes it that from 10 to 50 per cent.¹ of contacts in families are diphtheria carriers one at once realises with what large numbers one has to deal. In Brighton contacts in the home are swabbed only under exceptional circumstances.

All members of families are swabbed—(a) if any member is a teacher or other person associating with children outside the home.

(b) If any member sells or handles milk.

Individuals are swabbed—(a) if there be a history of cold or sore throat.

(b) If suspicion rests upon them as probable carriers; for instance, three or four cases of diphtheria had occurred in a Brighton school; a case was notified of a child of three who was not at school, but whose sister attended the school in question. A positive swab was obtained from this sister, who had no history of illness.

By taking swabs from such a small percentage one is well aware that many diphtheria carriers are missed, therefore exclusion from school is enforced for four complete weeks after the removal of the case to hospital, and the parents are advised to keep the children separate from others during that time.

(3) *Primary Cases in School*.—In schools in which diphtheria has occurred, according to tables collected by Graham Smith,² over 8 per cent. are diphtheria carriers.

Our first action in such cases is to make inquiries at the school as to absentees from the same class who returned shortly before the onset in the patient. If such are found, and if a history of sore throat or cold is elicited, swabs are taken. Swabs are also taken from all scholars present or absent in whom there is a history of sore throat or cold (all absentees from the class are visited, and inquiries are made as to the nature of their illness) *Even if the swabs are returned negative all persons with sore throat are excluded for a clear fortnight.* The theory on which this action is based is as follows :

A diphtheria carrier who has a sore throat, because of the presence of other virulent infective organisms (usually cocci) in the throat, is much more infectious than a carrier of diphtheria bacilli alone. One believes, indeed, that in the absence of other

¹ Graham Smith, p. 183.

² Graham Smith, p. 187.

virulent organisms diphtheria bacilli usually cannot infect. It is obvious that if the above is our working hypothesis we must exclude children with sore throats for a time, even although their swabs show no diphtheria bacilli, as these sore throats might provide complementary infecting agents.

In the presence of only one or two cases no further action is taken, and usually no further cases occur.

On the occurrence of more than two cases in an infants' class one considers the advisability of swabbing and clinically examining the whole class, and this is frequently done.

Instructions given to the school teacher include the use as far as possible of separate pencils, etc., by each child, and at times instructions are given to stop singing lessons.

Having described the administrative procedure used in the discovery of diphtheria carriers, one now proceeds to make a statement regarding the action taken by various authorities with regard to isolation.

In Brighton infective contacts are sent to the diphtheria wards. Except in the case of adults antitoxin is usually injected on admission, and generally the contact is treated similarly to diphtheria patients, three negative swabs being obtained from nose and throat before discharge. During the last year fourteen such contacts were removed to the Infectious Diseases Hospital for periods varying from 9 to 80 days, the average stay being 33 days. Six of these, aged 5, 12, 14, 21, 27, and 30 had no antitoxin during stays of 25, 20, 20, 16, 16, and 9 days respectively with no bad results; the remainder, aged 8 months, 2, 3, 6, 6, 7, 10, and 12 had 4000 units on admission, and their lengths of stay were 52, 54, 29, 26, 64, 26, 24, and 20 days respectively.

If objection is raised to removal to hospital the child is left at home; the parent is advised to keep the child apart from other children, and four weeks' exclusion from school is enforced. At the end of that time the child may return on two sets of swabs from nose and throat giving negative results.

In Cambridge a private house was rented in 1900 for the isolation of carrier cases. One takes it that this was done in order that parents might more readily consent to have their children isolated, and also that these might not pick up fresh infection from acute cases. When one considers the inconvenience and expense caused in the providing of nurses and maids when this home is in use, and also the yearly rent of the house, one would look for substantial benefits to recompense for such an outlay. During my stay in

Cambridge, acting on my Manchester experience, I introduced the method of treating diphtheria carriers along with diphtheria cases in the Infectious Disease Hospital, and in most cases found no difficulty in having such persons isolated. I believe that at present the rented house is simply used as an overflow from the hospital. Below a note is given of the number of contacts isolated at the private home and their length of stay there.

Weeks isolated	.	- 1	.	- 2	.	- 3	.	- 4	.	- 5	.	- 6	.	- 7	.	- 8	.	- 10	.	10 +
Actual numbers	.	16	.	53	.	53	.	26	.	14	.	11	.	9	.	4	.	5	.	5 = 196

The 5 cases over 10 weeks stayed for periods of 74, 97, 110, and 122 days respectively.

Of the 196 cases 141 had 500 units of antitoxin on admission, 17 had 2000 units, and 38 had none.

Twelve of the cases were for a longer or shorter period nursed in the diphtheria wards.

None of those 196 cases developed clinical diphtheria.

The Bristol methods can perhaps best be grasped by perusal of Dr. Davies' annual report for 1902, pp. 49-52.

"The unsuspected cases upon bacteriological examination resolve themselves into two groups :

"(1) Those in which the bacillus is found in characteristic growth needing care in hospital (diphtheria 'carriers').

"(2) Those in which the short forms (Hofmann, pseudo?) are found, mostly in the nose, . . . they are not in our opinion suitable cases for isolation. . . . Home treatment amongst a working class population in the case of a disease producing no obvious illness is apt to be imperfect, and for these 'suspected carrier' cases we arranged at Avonmouth an out-patient service at the Isolation Hospital for the proper application of antiseptic washes . . . each child being furnished with a card spaced for a fortnight, at the end of which a further bacteriological examination is made to determine re-admission to school."

In Bristol diphtheria bacilli bearers are isolated in the infectious disease hospitals, or by their medical attendant; children who have been in direct association with cases of clinical diphtheria (in home or at school), and who are Hofmann bacilli carriers, attend an out-patient department at the Infectious Disease Hospital or elsewhere. The establishment of special out-patient departments is only in force during epidemic prevalence of diphtheria. The difference in administrative procedure between Brighton and Bristol is that, whilst Hofmann's bacilli contact-carriers are disre-

garded in the one, they are medically attended in the other. In both towns morphological and cultural characteristics are in the main relied on to distinguish true diphtheria bacilli from allied forms. In taking this line of disregarding Hofmann carriers, although they may have been in contact with cases of true diphtheria, one relies on the facts ascertained by the bacteriologist. The principal of these are mentioned below.

(1) "The immunisation of animals with Hofmann's bacillus does not confer any protection against diphtheria bacilli injected subsequently.

"(2) The local reaction in guinea-pigs produced by the subcutaneous injection of large doses of pseudo-diphtheria bacilli is not influenced by the injection of antitoxin."

Also (3) considerable doubt is thrown by Petrie¹ on the production of toxoids by Hofmann's bacillus.

Again, one would be inclined to attach more importance to Hofmann's bacillus were it not that so great a number of *true diphtheria bacilli carriers are present during every outbreak of clinical diphtheria, and those themselves appear rarely to give rise to clinical cases*. In this connection a letter of May, 1909, from Claude B. Ker, of the Edinburgh City Hospital, is of considerable interest.

"It is the case that return cases of diphtheria were practically unknown in Edinburgh during the period that no cultures were taken before the patients were discharged. Nevertheless, when five years ago our laboratory was opened it was felt that cultures were necessary, if only to keep in touch with medical opinion. Since then, therefore, cultures have been taken as a routine, and the object has been to obtain two negative cultures (consecutive) before the patient is allowed home. We have not hesitated, however, in the light of our previous experience, to discharge the small minority of patients in whom, after six weeks' detention, the cultures remain steadily positive.

"One or two 'alleged' return cases have resulted, certainly not more than four in five years, and in every case, as it happens, negative cultures had been obtained from the discharged case."

J. H. Meikle mentions the discharge of twenty-seven diphtheria bacilli carriers without the occurrence of a return case (in five cases, however, experiments on rabbits gave no proof of virulence).

¹ Graham Smith, p. 224, *Edin. Med. Journ.*, September, 1906.

In Manchester, where, until recently,¹ only one negative swab was obtained from the throat before discharge of diphtheria cases, and where, therefore, many diphtheria carriers were discharged, Dr. Niven tells me that the number of return cases was trifling.

In view of the Edinburgh and Manchester experience one cannot regard it as a rash line of action to take no notice of Hofmann carriers; indeed, one would go further and disregard morphologically typical organisms avirulent to guinea-pigs were it not that at present the work of proof of virulence cannot be overtaken.

One now passes to the question of the *prophylactic injection of antitoxin*. The main object in avoiding such injections is in order that carrier cases may not be created. It has been proved that antitoxin has no influence on length of infectivity. It is, however, probable that attacks of diphtheria in contacts are rendered milder by such injections, and are, therefore, the more readily overlooked. It follows that extensive injection of antitoxin would lead to the non-isolation of certain highly infective individuals. Minor deterrents to such injections are the expense, the trouble, and the friction likely to be caused by adopting such measures. Neither must it be forgotten that itching rashes, with temperature and joint pains, may follow even small doses; more recently attention has been called to the disadvantage of "sensitising" contacts.

One warns the parents of the great danger incurred by not calling in a doctor at the *onset* of even slight illness in any other member of the family.

A natural question which arises is, "If prophylactic injections of antitoxin in the home are not advised, why should one give healthy carrier children any injection on admission to the diphtheria wards?" It would, in my opinion, be much better not to do so, but as one usually states to the parent that there is practically no risk of even slight illness, one has in these cases to consider the individual rather than the public health of the community. No carrier case has in my experience ever developed diphtheria during isolation, but if any one of them had developed an attack and no antitoxin had been injected, one might have been accused of taking unnecessary risks.

Before concluding it should be mentioned that the administrative procedure outlined is that which appears suitable for urban districts in which whole-time Medical Officers of Health are employed; in my experience the action recommended produces a maximum of benefit with a minimum of labour and expense.

¹ Two consecutive negative swabs are now required from throat and nose.

AN EXAMINATION OF 240 SKULLS WITH REFERENCE TO THE SPHENOIDAL SINUS AND THE SPHENOMETHMOIDAL CELL.

By W. S. SYME, M.D. EDIN.,

Assistant Surgeon, Ear, Nose, and Throat Hospital, Glasgow.

I MUST in the first place acknowledge my indebtedness to Professor Cleland, late professor of anatomy in Glasgow University, and to Dr. Hutton, lecturer on anatomy, Queen Margaret's College, Glasgow, for the opportunity of examining these skulls.

The largest sphenoidal sinus in the series has the following diameters: Antero-posterior $1\frac{3}{8}$ in., lateral 1 in., supero-inferior $1\frac{1}{4}$ in. The smallest is rudimentary. In none of the skulls is either sinus entirely absent.

(1) *Distance of the Sphenoidal Sinus from the Anterior Nasal Spine of the Maxilla.*—The average distance of the ostium is $2\frac{1}{2}$ in., the extremes being $2\frac{1}{8}$ in. and $2\frac{3}{4}$ in. To the posterior wall the average on the right side is $3\frac{1}{4}$ in., and on the left $3\frac{3}{8}$ in., the extremes being $2\frac{3}{4}$ in. and $3\frac{7}{8}$ in. In only one sixth of the number is the posterior wall distant less than 3 in., and in none is the anterior wall distant more than 3 in. The only practical source of error is the position of the most posterior ethmoidal cell, which in some extends beyond the anterior wall of the sinus, partly encroaching on it, and if the probe be passed too laterally or too high it may go more than three inches without entering the sinus. In the living subject at least a quarter of an inch should be added to these measurements on account of the soft structures in front of the nasal spine.

(2) *Relations of the Sphenoidal Sinus.*—The sinuses are rarely of equal size. One might say that in this respect the abnormal is the normal. But only in a certain proportion is the inequality very marked. As a rule the larger sinus extends behind and above the smaller. In only two cases have I found the extension behind and below. Inequality of the anterior lateral diameters is not so common, but in six of the skulls this was of such a degree that the larger cavity could be easily opened into from either nostril.

As we shall see, the sphenomethmoidal cell not infrequently encroaches on the sinus on one or both sides. Normally the sinus is in relation to the carotid tract and to the optic foramen of its own side, but there are many exceptions to this rule. The sphenoidal cavities normal in this respect number 372 out of 480. Of the 108 abnormal, the irregularity in the inter-relations of the

sinuses themselves is accountable for 42, and that of the position of the sphenothmoidal cell for 66.

The left sphenoidal sinus is in relation to both optic tracts in 27, and to both tracts and both foramina in 4. On the right side the figures are 8 and 3. The bone separating the optic foramen from the sphenoidal cavity varies in thickness, but in the majority it is very thin. In 6 the right sinus extends completely beneath the foramen, and on the left side the same condition of things is found in 3. In one skull this extension, which reaches on both sides into the inferior root of the lesser wing of the sphenoid, expands at its external end to form a good-sized cell. In such cases the bone separating the contents of the optic foramen from the extension of the cavity is exceedingly fragile.

Of the main part of the sphenoidal cavity the supero-external boundary is the thinnest and the roof is only a degree firmer. This latter wall is level in some, while in others it bends down into the cavity more or less abruptly, even, occasionally, almost to divide the sinus into an anterior and a posterior part. The anterior wall is in most parts composed of thin bone, except at the external part, where it is frequently much thicker, and forms at its junction with the lateral wall of the sinus a firm pillar.

In the large majority of these skulls the intersinusal septum is intact, and in the few in which it is defective it is not possible to say whether the defect was present during life or not.

In one skull a large right sinus has no ostium, and in two instances the opening into the sinus is through the sphenothmoidal cell. In one skull there appears to be a supernumerary sinus developed in the upper part of the intersinusal septum. In fifteen sinuses the cavity is divided more or less completely by osseous septa.

In young adults the sphenoidal cavities are situated at a lower level than in the fully developed skull.

In a number of skulls small foramina are present, usually in the supero-external wall and in the roof, passing from the cavity to the floor of the cranium.

(3) *The most Posterior Ethmoidal or Sphenothmoidal Cell.*—This, the largest of the posterior ethmoidal group, varies much in size and also in its position relatively to the sphenoidal sinus. It is in some so large as to hide almost completely the anterior wall of that cavity. Normally, it is situated altogether anteriorly to the sphenoid and it does not come into relation with the optic foramen; but abnormally it extends above, external to, or beneath the sinus

of its own side, and in two of the skulls it passes beyond the middle line above the sinus of the other side, in one coming almost into relation with the opposite optic foramen as well as with that of its own side. In sixty-six instances this cell extends back to come into relation with the optic foramen, displacing the sphenoidal sinus; this is found on either side in thirty-three, but the number only chances to be equal, because the position of the sphenothmoidal cell is by no means always the same on both sides. In these skulls, its situation, in the majority, is above and external to the sinus. In four right and one left it has an extension below the optic foramen such as has already been described as existing in certain of the sphenoidal cavities, and in three right and five left it is not only in relation to the foramen, but it extends back externally to the sinus to come into relation with the carotid tract. In one instance there are two ethmoidal cells, one above and one external to the sinus.

The outside boundary or orbital plate of the ethmoid is on a plane external to the lateral wall of the sphenoidal sinus.

Both the sphenoidal cavity and the sphenothmoidal cell have other relationships which are important. That with the orbital fissure is intimate, but more important is their relationship to the foramen rotundum, because of the contracted space and firm walls of that opening, since any increase in the size of its contents from congestion or inflammation is more likely to be followed by injurious effects. In some of the skulls the bone separating this foramen from the sinns is thick, but in others it is very thin, and in some, moreover, the foramen is so overlapped by the sphenothmoidal cell that the second division of the fifth nerve must have passed for some distance in close contact with the walls of these cavities. Somewhat similar remarks, especially with reference to the sinus, apply to the Vidian canal, the interest of which lies in the fact that the Vidian nerve is connected by its great superficial petrosal branch with the plexus on the inner wall of the tympanic cavity.

THE THIRD INTERNATIONAL CONGRESS FOR SCHOOL HYGIENE will be held in Paris, and will commence on August 27, 1910. A section, No. XI, has been added for the consideration of questions relating to sight, hearing, and physical defectiveness. Mr. Macleod Yearsley informs us that he has been appointed English secretary to this section. All inquiries concerning it may therefore be addressed to him.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Meeting on January 7, 1910.

DR. DUNDAS GRANT, *President, in the Chair.*

Abstract of Proceedings by DR. DAN MCKENZIE.

THE following cases and specimens were shown :

A CASE OF EXTRINSIC CARCINOMA OF THE LARYNX.

BY MR. SECCOMBE HETT.

The patient, a man, aged sixty-five, was admitted to University College Hospital on June 7, 1909, having had difficulty of swallowing of six weeks' duration.

On laryngeal examination by Mr. Tilley a large, rounded, greyish-white mass was found immediately behind the free portion of the epiglottis and completely filling the entrance to the larynx. Further, Mr. Tilley found that the larynx proper was free from disease, and that the growth probably sprang from the region of the ary-epiglottic fold or the base of the epiglottis. The whole appearance was that of an epithelioma. There were some enlarged glands in the neck. June 14, 1909 : Operation by Mr. Wilfred Trotter. Laryngotomy ; dissection of the anterior and posterior triangles on the right side ; longitudinal pharyngotomy after resection of ala of thyroid and cornu of hyoid ; excision of growth ; suture of mucous membrane.

Dr. W. HILL congratulated Mr. Trotter upon the excellent result of his operation, especially since the betting must have been against success. It seemed that an extensive growth had been removed without interfering with the larynx, and so far without any recurrence. But still he supposed that recurrence might be expected. At the same time, if many of these cases were put upon record it might be necessary to revise one's opinion upon the value of partial laryngectomy.

Mr. SCANES SPICER drew attention to the star-shaped mass of the growth which had had its seat near the arytaenoid.

Mr. FITZGERALD POWELL said that the thanks of the Section were due to the exhibitor for the opportunity of seeing this interesting case. The operation which had proved so successful was, of course, a lateral pharyngotomy and not a partial laryngectomy. He did not understand why laryngotomy had been performed.

Mr. H. TILLEY, describing the appearance of the tumour before operation, said that its extraordinary size rendered examination by the direct method impossible and so prevented him ascertaining its exact site of origin, and although the lower half of the pharynx was filled with the growth, yet the patient could both breathe and swallow without difficulty.

Dr. STCLAIR THOMSON, while agreeing that remarkable success had attended the surgical procedure adopted, was inclined to think that the success of the operation had been due to some extent to luck. The growth presented a pedicle very well marked for a malignant tumour, and the larynx had escaped infiltration, as the free movement of the cord and arytenoid at the present moment clearly showed. He was aware that pedunculated malignant growths did at times occur in the larynx, and that such tumours had been removed *per vias naturales* without any recurrence following, but this was a method which could not be recommended. He suggested that these pedunculated growths occupied a borderland between innocence and malignancy, and that a careful microscopic investigation of the present specimen might afford some information by which similar tumours could be diagnosed in future.

Dr. WATSON WILLIAMS hoped that pictures of the specimen and of its microscopic appearances would be published in the *Transactions*.

Mr. WILFRED TROTTER pointed out, with regard to the question of a pedicle, that the tumour consisted of two portions, one of which was pedunculated, while the other was sessile; the non-pedunculated portion, which was about the size of half-a-crown, presented, moreover, a characteristic epitheliomatous ulcer. Both these portions of the growth had been examined microscopically, with the result that both were found to be epitheliomatous. The glands, which proved at the operation to be more numerous than had been expected, were also the seat of epitheliomatous changes. Referring to the operation he had selected, the speaker said that he did not share the common view that total laryngectomy was called for in all cases such as this. He thought, moreover, that this view often led surgeons to delay operating until the growth had become so large as to justify the mutilation of a total laryngectomy, and in this way the time when interference was likely to prove most favourable was allowed to slip away. His objects in adopting this particular mode of operating were as follows: The operation should be planned so that the growth should occupy the centre of the piece removed, in obedience to the general principle recognised in operating for cancer in other regions of the body; laryngeal cancer should, as often as possible, be attacked from a mucous and not from an extra-mucous surface, otherwise the growth would be cut into during removal, before it could be sterilised with the cautery—an essential detail in all such operations—and thus dissemination of the cancer-cells would be favoured. These were the reasons that had induced him to expose the tumour by a lateral pharyngotomy, coupled with a resection of a finger's breadth of the thyroid cartilage. Having obtained access to the tumour by this route, he then excised it and its attachments to the mucous membrane. A further advantage of the method lay in the fact that after the excision he was able to bring together the cut edges of the mucous membrane, which in this situation is very lax, and to suture them so as to prevent leakage from the pharynx into the extra-pharyngeal wound, a plan which avoided any interference with the patient's powers of swallowing and greatly favoured healing.

FURTHER NOTES ON A CASE OF HOARSENESS IN A WOMAN, AGED SIXTY.

BY DR. G. C. CATHCART.

This case was shown at the last meeting. It was then impossible to see the cause owing to the great swelling of all parts of the larynx. The swelling had now disappeared and the voice was natural, the cords being easily seen.

Dr. WATSON WILLIAMS asked what treatment had been adopted.

The PRESIDENT thought the case illustrated how the voice might be impaired through swelling of the ventricular bands.

Dr. CATHCART replied that the treatment had been very simple—inhalations of tinct. benzoin co.

TUBERCULOSIS OF PHARYNX.

BY DR. ANDREW WYLIE.

Male, aged thirty-two, clerk. About three months ago he noticed a small spot on the right tonsil, which gradually increased. There was pain on swallowing for several weeks. History of fistula six years ago. Severe cough and spit in the mornings. Slight night sweating; weight reduced $1\frac{1}{2}$ stones within the last few months. No family history of tubercular disease. No history of specific disease. Four weeks ago the left ear began to discharge, commencing without pain. The right anterior pillar of fauces was ulcerated, and on the posterior pillar there was an ulcerated patch. On drawing forward the right anterior pillar of the fauces a large ulcerated mass could be seen. Dr. Wyatt Wingrave found tubercle bacilli in great numbers on examination of the pus from the ulcerated surface and also in the sputum. Epiglottis somewhat enlarged and arytaenoid cartilages swollen, but no ulceration or infiltration of the vocal cords. Crepitant râles both apices.

Mr. SECCOMBE HETT asked whether the case might not be described as one of tuberculosis of the tonsil, as there was a large hole between the pillars of the fauces. He had seen some four or five cases of tuberculosis of the tonsil, and the disease, starting as a tuberculous ulcer, gradually ate the tonsillar tissue away.

Dr. STCLAIR THOMSON observed that the arytaenoids and epiglottis were normal, and asked that the future history of the case might be recorded. In his experience pharyngeal tuberculosis was a rare disease, although lupus was not uncommon; and in the cases he had seen the disease in the lungs had been very acute, the patients running high temperatures, and the bacilli in the sputum appearing in clumps. The pharyngeal disease in these circumstances was sometimes mistaken for diphtheria. The case now exhibited was a mild case, and so he hoped its future progress would be watched. In those he had seen the limit of life had been between three and six months.

Mr. SCANES SPICER had noticed a mass behind the anterior pillar of the fauces, and asked what its nature was. He also asked what treatment was being carried out.

Dr. JOBSON HORNE, with respect to the question of the frequency of pharyngeal tuberculosis, agreed with Dr. StClair Thomson. He had seen very few cases, and in an investigation into the presence of tuberculosis of the tonsils in tuberculous people he had not been able to find bacilli without much difficulty.

Mr. FITZGERALD POWELL, on the other hand, had seen tuberculosis of the pharynx not infrequently; and his experience of the disease was more favourable than that of Dr. StClair Thomson, for he had seen these patients get quite well and live for years.

Dr. WYLIE agreed with Mr. Hett that the proper designation of the case was tuberculosis of the tonsil. He did not think the patient was likely to live long. The mass behind the faucial pillar was probably the remnant of a portion he had removed for microscopic examination.

CASE OF LARYNGEAL NEW GROWTH FOR DIAGNOSIS.

BY DR. WATSON WILLIAMS.

Eli H—, aged sixty-three, came to the Bristol Royal Infirmary July 7, 1908, complaining of cough, expectoration of phlegm, and hoarseness since Christmas 1907. The fauces were a little congested, but examination of the larynx revealed a pink, irregular, nodulated neoplasm involving the left arytaenoid eminence, the left ventricular band of the posterior surface of the left side of the epiglottis, and extending to the glosso-epiglottic fold, and projecting over the glottis so as to conceal completely the left vocal cord, except that the posterior one third was visible when looked at obliquely from the right side, and then it was seen that both cords moved freely on phonation. Two small, hard, movable glands were felt behind and above the angle of the jaw on the left side of the neck. It was diagnosed as epithelioma, and on account of the patient's age it was felt inadvisable to operate on a growth which had already involved the glosso-epiglottic fold and was complicated by enlarged glands.

The patient had been seen several times since; at first the growth gradually increased in size, without apparently obviously extending to the regions not involved at the first inspection. In December, 1909—that is, two years after the growth was first causing hoarseness and seventeen months after he was first seen—the condition was apparently much the same. The patient's general health did not appear to have deteriorated. The possibility of its being a tuberculous growth was considered, but a Pirquet's reaction was negative and there were no general symptoms or lung conditions to support this view. When first

seen the patient was put on sixty grains of iodide of potassium daily for some months.

The PRESIDENT agreed with the diagnosis of malignant disease, which he considered to be confirmed by the condition of the glands. It was probably a slowly growing form of epithelioma.

Dr. WILLIAM HILL thought that the growth, from its slow advance, was more like an endothelioma than an epithelioma.

Mr. SCANES SPICER remarked that no limit of time could be laid down in laryngeal cancer; he had shown a case at the Society for five years which ultimately proved to be malignant. The tumour in the present case was lobulated, and as the mucous membrane seemed to move independent of the underlying growth, the impression he received was that it was encapsulated by a condensation of the normal tissues around it. The tardy growth of the tumour might be due to the fact that the man's occupation, that of a gardener, was a healthy one.

Mr. HERBERT TILLEY had been struck by the appearance of the lower edge of the swelling; it seemed to him as if beyond this edge there was some ulceration. Consequently he advised examination by the direct method, supplemented by inspection through a mirror passed along the tube so as to reflect the area beyond the lower edge. If an ulcer did exist there a piece might be punched out for microscopic examination. Epithelioma of the larynx occasionally manifested a certain latency. He recalled a case, under the care of Sir Felix Semon, Mr. Butlin, and himself, in which a thickening of one cord was present for no less than seven years, the patient remaining in good health all that time. Finally, marked hoarseness having come on, the larynx was opened, and the disease was found to be epithelioma.

Dr. STCLAIR THOMSON said that there was a case on record which had been watched by Dr. Gleitsmann, Harmon Smith, and the American Laryngological Society for ten years, the cord presenting the appearance of "a field of wheat that had been snowed on." This also ultimately proved to be epithelioma.

Dr. WATSON WILLIAMS, in reply, expressed his satisfaction that the members did not think he had left undone what he ought to have done. Mr. Tilley's suggestion was a useful one. In the absence of any obvious ulceration he had hitherto refrained from interfering with the lesion, because he was convinced that removing for diagnostic purposes a piece of a tumour which had not broken down was bad practice.

ENDOTHELIOMA OF THE ETHMOID.

BY MR. CHICHELE NOURSE.

When first seen in October last, the patient, a well-nourished woman, aged twenty-nine, complained of complete obstruction of the right nostril with yellowish and bloody discharge, but no pain. The nasal septum was deflected to the left, and the right nostril blocked by a smooth red swelling, which seemed to be the much enlarged inferior turbinal. Eighteen months before some slight intra-nasal operation had been performed elsewhere, with temporary relief; prior to that the nostril had been stuffy for

two years. After an unsuccessful attempt to remove the growth with a turbinotome, the nostril was partly cleared with forceps. The growth was friable, and not very vascular. Specimens were handed to Dr. Wingrave, who reported that it was an endothelioma. The right antrum was absolutely dark on transillumination. In puncturing through the nasal wall no bone was encountered. The antrum contained no fluid.

The operation was performed on December 16th. After a preliminary laryngotomy, a flap consisting of the soft parts of the cheek and upper lip was turned outwards as for excision of the superior maxilla. The maxillary antrum was then opened through the anterior wall, and the ascending process of the superior maxilla and a part of the nasal bone removed, so as to effect a complete exposure of the right nasal fossa and of the antral cavity. The antrum contained polypi and an irregularly thickened lining, which was easily detached from the bone, leaving a roughened surface. The bony inner wall had almost disappeared. Parts of the anterior, posterior, and orbital walls were very much thinned. There was no bulging.

The superior nasal fossa was healthy. A pedunculated mass, the size of a small walnut (weighing 18 grm. after removal) projected downwards into the nasal cavity from the anterior part of the ethmoid; its attachment was surrounded by a cluster of small prominences on the thickened mucous membrane. From this point downwards the whole mucous lining of the outer wall and floor of the right nasal fossa was thick and uneven. The partition between the antrum and the nose consisted, except at its edges, of a fleshy curtain without bone.

The whole of the diseased tissue was stripped from the nose and the antral cavity, leaving the bone bare, except where parts of the thin bone came away with the growth. The thin bone of the posterior antral wall gave way, and the fat in the zygomatic fossa was exposed. The nasal duct was divided close to the lacrimal sac, and removed with the tissue in which it was involved. The middle turbinal body, though apparently unaffected, was also removed. Chloride of zinc solution was freely applied to the cavity: the antrum was lightly plugged with gauze, and the wound closed with sutures. Healing took place rapidly. A few days later some small sloughs came away, and there was some œdema of the cheek and eyelid for about a week. The present condition of the patient is satisfactory.

Dr. Wyatt Wingrave's report was as follows: The growth

consisted of rods of cells, similar to endothelium, of varying size, separated by a stroma of colloid-looking substance containing a few fixed connective-tissue cells and plasma-cells. In the more developed regions the stroma was scanty or absent, endothelium being predominant, while, in the intermediate stage, alveolation was well marked. Where the cylindrical arrangement prevailed there was a distinct lumen filled with colloid substance, having the appearance of thyroid gland, but, unlike the latter, not giving the thionin reaction, but selecting acid stains. Many of the sections showed a boundary of dense fibrous tissue, but there was no definite and regular capsule. In parts the bone was involved, with considerable involvement of the periosteum. The individual cells were fusiform or circular according to the axis of section. The nuclei were oval, containing very small karyocytes. Here and there heteromitoses were seen. Their cytoplasm was clear. The middle turbinal proved to be invaded by growth. In the antral lining a small amount of lymphocytic infiltration was present, with clusters of plasma-cells, and elongation of gland ducts, lined with palisade epithelium; therefore most of the thickening was due to prolonged inflammation.

Mr. STUART-LOW congratulated Mr. Nourse upon the result as regards the disease, but suggested that, as the patient was a female, the ethmoidal region might have been reached through the antrum by an incision in the canine fossa, both the outer and the inner walls of the antrum being removed. In this way perfect access can be obtained without leaving any scar on the face.

Dr. WATSON WILLIAMS also joined in congratulations upon the successful outcome of the operation, although it was impossible to speak with certainty until some time had elapsed. With regard to the mode of access chosen he recommended his osteoplastic method, which gave very free access without much cicatrix. Intra-nasal operation for these cases should not be attempted.

Dr. L. H. PEGLER remarked that the type of endothelium present in the case was the same as that found in the soft palate,

Mr. SCANES SPICER was not inclined to perform external operations for these endo-nasal growths; he had, for example, removed twelve years ago an alveolar sarcoma from the antro-ethmoidal region in a case which he had shown at this Society, and the case was still well. He asked whether there were any microscopic appearances in these tumours which would lead one to operate through the cutaneous rather than through a mucous surface in certain cases.

Dr. JOBSON HORNE agreed with Mr. Scanes Spicer, and asked that a section of the tumour might be handed to the Society for future reference.

Mr. HERBERT TILLEY said that in most of these cases quite sufficient room was obtained by operating through the mucous membrane under the cheek. The only difficulty lay in the administration of the anæsthetic through the mouth, for when the mouth was opened by the gag the soft

parts became stretched out and prevented access to the wound. This difficulty could be overcome, however, by administering the anæsthetic through a laryngotomy opening, and then, if still more room was necessary, the nasal septum could be cut through and the whole face turned up. He had tried this method and had found it very advantageous, but in order to obtain the most perfect access the mouth had to be closed. This was, of course, what was known as Rouge's operation.

Mr. LAMBERT LACK agreed with Mr. Herbert Tilley in advising Rouge's method of approaching the interior of the nose in cases such as this. He had also tried Dr. Watson Williams' operation and could recommend it. He stated, as a rule, that for growths in the lower part of the nose Rouge's operation was the most suitable, while for growths rooted in the upper regions Dr. Watson Williams's operation gave the best access.

Dr. STCLAIR THOMSON, referring to the question of operating through the nose, asked Dr. Lambert Lack whether he had not shown some cases before the Society upon which he had successfully removed tumours through the natural passages; but—

Dr. LAMBERT LACK said that the growths had recurred.

Dr. WM. HILL narrated a case in which an endothelioma of the nose had been removed by Mr. Page by means of Rouge's operation. The growth recurred, however, and the patient declined further operations. Nevertheless, Dr. Hill, by means of snaring and curetting, was able to remove it entirely again, with the result that a further recurrence was delayed for a very long time, and although the patient ultimately died, still his life was considerably prolonged by the simple measures he adopted. In these cases the microscope, as a guide to the degree of malignancy, was unreliable.

Dr. DAN MCKENZIE said that it did not seem as if any general principle could be enunciated as a result of the discussion upon this case. There seemed to be some doubt as to when a nasal growth should be removed through the nose. In this connection he referred to a series of cases of nasal sarcoma treated by Dr. Price-Brown by means of snare and cautery with considerable success.

Mr. W. CHICHELE NOURSE, in reply, said that he had carefully considered what mode of access was most suitable for the case, and had decided in favour of external operation because it alone, in his opinion, gave a sufficiently free approach to a tumour lying so high in the nose. The interesting feature in the case was the microscopical character of the tumour and not the state of the patient, for the operation was too recent to permit of any congratulations upon that point. With reference to the scar, he expected that as time went on it would become less noticeable, as at present there was a good deal of infiltration in the flap.

BANDS BETWEEN EUSTACHIAN TUBE AND PHARYNX.

By DR. E. A. PETERS.

F. G—, woman, aged twenty-nine. Two bands could be seen passing from the lip of either Eustachian tube to the pharyngeal wall. The bands were not quite symmetrical, and one was continued as a cicatricial band across the pharynx. Chronic otitis media was present on both sides. The patient did not report

scarlet fever or measles. An operation for adenoids was carried out at the Evelina Hospital eighteen years ago. Were the bands natural or post-operative?

Mr. JOBSON HORNE had often asked himself the same question in similar cases he had seen, but had never been able to obtain a satisfactory reply.

The PRESIDENT recalled cases of bands in patients who had not been operated on, but they were the result of the natural shrinkage of adenoids, and were pink, fleshy, and symmetrical; those in the present case were unsymmetrical, white, and stringy, and they were, in his opinion, post-operative. Such bands were easily divided, but he knew no simple means for preventing them from re-uniting.

Mr. SCANES SPICER observed that in this case the large bands were evidently traumatic, because they were white and cicatricial in appearance.

Dr. L. H. PEGLER advised that the bands should be removed in order to improve the hearing.

Dr. H. J. DAVIS suggested that the bands might be removed and examined for scar-tissue.

Dr. STCLAIR THOMSON said that the bands might either be natural or post-operative. He had seen many such cases in which the ears were not affected.

Dr. LAMBERT LACK sympathised with Dr. Dundas Grant in his desire for a simple method of cure. In the cases he had seen there had been nasal obstruction, which persisted in spite of all efforts to break down the adhesions. He suggested that less zeal in operating for adenoids might prevent their formation.

Dr. E. A. PETERS replied that the symmetry of the bands in this case favoured the view that they were natural and not cicatricial. When adhesions did appear in this region they were due, in his opinion, not to an excess but to a defect of operative ardour.

GENERAL INFILTRATION OF LARYNX, PROBABLY LUETIC.

BY DR. DAN MCKENZIE.

Woman, aged forty-four. Hoarseness, with occasional loss of voice for the last nineteen months. Subject to distressing paroxysms of coughing and severe dyspnœa. These attacks were set up by swallowing food, and so her meals had been seriously restricted in quantity. Purulent discharge from right nostril; in July and September of last year two sequestra washed out of the nose on syringing. When she came to hospital a month ago the laryngeal infiltration simulated tuberculosis; the epiglottis was thickened, and lobulated masses invested with muco-pus were visible in the interior of the larynx, particularly in the neighbourhood of the right ventricular band. There was pain on swallowing. Von Pirquet reaction negative; no signs in lungs; no tubercle bacilli in sputum. The right nostril contained crusts, and the

inferior turbinal has disappeared. The Wassermann reaction was negative (Dr. Wyatt Wingrave), but the therapeutic test seemed to favour the diagnosis of syphilitic infiltration, seeing that potassium iodide in 10 gr. and, later, 15 gr. doses had effected considerable improvement in the condition of the larynx, and along with this improvement the resemblance to tuberculosis had become much less marked.

CASE OF DESTRUCTIVE ULCERATION OF THE HARD AND SOFT PALATE IN A YOUNG MALE ADULT, WITH EXFOLIATION OF LARGE MESIAL SEQUESTRUM, APPARENTLY OF SPECIFIC ORIGIN, IN A TUBERCULOUS SUBJECT.

BY DR. DUNDAS GRANT.

CASE OF A GROWTH IN THE NASO-PHARYNX OF AN ELDERLY FEMALE, LIKE VERY PALE "ADENOIDS," BUT MUCH MORE DENSE IN CONSISTENCE, SUGGESTIVE OF MALIGNANCY.

BY DR. DUNDAS GRANT.

Microscopical examination revealed the structure of a granuloma, and there was every probability that the case was specific and that a deep-seated sequestrum would be detected.

Dr. L. H. PEGLER had observed a large quantity of pus in the pharynx.

Dr. H. TILLEY asked whether the naso-pharynx had been examined with the finger, because he had on one occasion come across adenoids in a stout, middle-aged woman.

The PRESIDENT said the naso-pharynx had not been completely explored by the finger, but the growths were felt to be very tough.

Mr. SCANES SPICER said that the pus was thick and almost like membrane. Were the nasal sinuses healthy?

Mr. FITZGERALD POWELL hoped that the case would be shown at a future meeting.

MICROSCOPICAL SECTION FROM FRAGMENT OF AN ADENOID-LIKE GROWTH IN THE NASO-PHARYNX OF A MIDDLE-AGED LADY, PROBABLY AN EARLY STAGE OF EPITHELIOMA.

BY DR. DUNDAS GRANT.

Pathological report not definite.

Dr. L. H. PEGLER thought the growth malignant.

ULCERATION OF LOWER LIP, INSIDE OF CHEEK, AND TONGUE;? SPECIFIC.

BY MR. CHICHELE NOURSE.

When this young man, aged twenty-two, was first seen on November 30 last, he complained of soreness of the month and tongue, which had troubled him for about a month. On the inside of the lower lip and on the buccal surfaces of the cheeks were patches of superficial ulceration with whitish raised surfaces, looking like mucous patches. There was also a small ulcer of a similar character on the right border of the tongue. The ulcers were now smaller, and slightly changed in appearance; they were still very painful. No history of syphilis could then be obtained, nor were any signs of past or present specific disease to be found elsewhere. (At the meeting the patient admitted having had a sore eighteen months ago.) A scraping from an ulcer yielded no specimens of *Spirochaeta pallida*, but *Spirochaeta fetida* and *Bacillus fusiformis* were present in numbers. Wassermann's reaction was negative. (Wingrave.)

The PRESIDENT considered the patches to be late secondary syphilitic manifestations. He had elicited from the patient a history of a local infection eighteen months before.

Mr. NOURSE replied that this opinion was supported by the effect produced by the administration of mercury.

A LARYNGEAL CASE FOR DIAGNOSIS, PROBABLY MALIGNANT.

BY MR. FITZGERALD POWELL.

Opinions were asked with regard to advisability of operation.

Mr. SCANES SPICER agreed that the disease was malignant.

The PRESIDENT was in agreement as to the diagnosis, and did not advise operation.

COMPLETE OCCLUSION OF THE LEFT NOSTRIL BY A DEVIATED SEPTUM
IN A GIRL, AGED SEVEN.

BY DR. G. C. CATHCART.

Mr. W. STUART-LOW said that in this case he would advise operation by means of a window resection; care should be exercised to disturb the soft parts as little as possible, and not to remove too much of the cartilage. He had recently seen a patient, aged eight, in whom an ugly nose had resulted from inattention to this point on the part of a well-known surgeon.

Dr. L. H. PEGLER had operated upon patients as young as five years. The projection should be sliced off on Moure's principle and a splint worn for some time afterwards. This gave very good results.

Dr. H. J. DAVIS asked if any of the members had ever seen a case in which the bridge of the nose had fallen in after the resection operation.

Mr. SCANES SPICER said that a true falling-in of the bridge did not occur as a result of resection, and that any objection to the operation based upon such a fear was largely theoretical. At times one saw a dimpling of the bridge after operation, but it did not amount to a deformity. He himself had operated upon children as young as three or four. He did not like the method recommended by Dr. Pegler. Another reason for operating at once in the present case was that as a result of the unilateral nasal obstruction the development of the face was being interfered with, and irregularly formed orbits with consequent strabismus might result.

Dr. FITZGERALD POWELL could not agree with the advice to operate upon a patient so young. It would be better to wait until the nose was fully developed. Nothing was to be gained by operating at the present moment; there was no deafness, for example. He had never seen strabismus result from nasal obstruction.

Dr. LAMBERT LACK said that falling-in of the bridge of the nose was not imaginary, for he himself had seen it occur. But the danger did not exist in adult cases, only in children, and in them the deformity appeared from six months to two years after operation.

Dr. DAN MCKENZIE believed that there was a certain amount of risk in removing a portion of the septal cartilage in early life. He thought, however, that the question could not be definitely settled until the children who had been operated upon had grown up, and at the present time the resection operation had not been long enough in vogue to supply a sufficiently large number of decisive cases.

Dr. H. TILLEY had seen dimpling of the bridge in an adult follow an application of the plough too high in the nose.

The PRESIDENT thought a discreet operation desirable in this case.

Dr. CATHCART, in reply, remarked that the case was a peculiar one in some respects. Enlarged tonsils and adenoids had been removed without relieving the obstruction to breathing. He did not think that the removal of a window would be sufficient. He also had seen falling-in of the bridge after septal resection, the nose becoming tip-tilted as if the septum had been fractured.

AUSTRIAN OTOLOGICAL SOCIETY.

June 28, 1909; *Monats. f. Ohren., year 43, No. 10.*

PROFESSOR V. URBANTSCHITSCH *in the Chair.*

Abstract of the Proceedings.

TUBERCULOUS TUMOUR OF THE LOBULE OF THE EAR.

By H. FREY.

This occurred in a girl, aged twenty-two, who was stated to have suffered with a swelling on the left side of the neck during

childhood. This, after incision, healed in some three or four years. Four years ago Dr. Kaufmann had removed a tumour from the lobule of the ear, which, however, had commenced to reappear in about a year. The case was first seen by Frey ten days ago, when he had found a swelling about the size of a cherry situated in the lobule, bluish, not tender or painful, the skin over it being thin and not presenting anything peculiarly characteristic of lupus. It was removed under a local anæsthetic and found to be a typical tubercular granuloma. It was suggested that its occurrence was due to an accidental infection from the previous disease in the neck.

OTITIC ABSCESS OF THE LEFT TEMPORO-SPHENOIDAL LOBE.

By F. ALT.

A man, aged twenty-eight, who had been treated in the ordinary way for a left-sided discharge from the ear, due to destruction of the membrane and suppuration in the attic, since the end of January in the "Rudolfsspital," was ultimately submitted to the radical operation on May 18. The bone was abnormally eburnated and the antrum almost obliterated. Up till now the patient had shown no cerebral symptoms, but on the fourth day after the operation a slight paresis appeared and was succeeded by the whole picture of aphasia—loss of memory, sensory and motor aphasia, partial alexia and agraphia, and the pulse-rate dropped to 54, so that all pointed to an abscess in the left temporo-sphenoidal lobe. On May 27 a further operation was therefore undertaken. As the roof of the antrum had been removed at the previous operation the approach was made in this situation, and the dura was found not outwardly altered in appearance but not pulsating. It was opened by a crucial incision, and an exploratory puncture having revealed the presence of pus, the brain was then incised and about 60 c.cm. of foul-smelling matter evacuated. The cavity was swabbed clean with peroxide of hydrogen and packed with iodoform gauze. The pus contained bacilli and cocci, which had not yet been identified with certainty. The aphasia slowly passed off, and in nineteen days the patient could name objects shown to him, and in a few days the other associated symptoms disappeared as well. The discharge ceased in ten days, and the patient, whose general condition was excellent, left the hospital on June 23.

SIMULTANEOUS AFFECTION OF THE AUDITORY AND FACIAL NERVES.

BY IS. BRAUN.

A man, aged twenty-four, applied for treatment at the ear department of the Kaiser Franz Josef Ambulatorium on April 18, complaining that he had been the victim of noises in the right ear and giddiness for two days, and had been unable to close the right eye since the day before. Present condition: Paresis of the frontal, palpebral, and buccal portions of the right facial nerve. When standing or walking with the eyes closed falls to the right. Spontaneous nystagmus to the left on looking directly forwards, and even also when the eyes are directed towards the right, but much weaker, with a slight rotatory element (114 jerks to the minute). After ten revolutions to the right horizontal nystagmus to the left, whilst the same number of revolutions to the left evoked only a slight nystagmus to the right, but quite transitory, and soon overshadowed by the spontaneous movement to the left. Caloric reaction to cold water in the right ear did not affect the character of the spontaneous nystagmus to the left. Both tympanic membranes normal. Functional condition of the right ear very much impaired indeed, that of the left ear normal. Weber to the left. As he had had syphilis at the end of 1908 he was treated accordingly, and in some two months' time the symptoms had all very much improved, and his range for whispers in the left ear was about 4 metres.

Braun considered the most probable cause of this condition to be a circumscribed basal meningitis, venereal in origin, and submitted that this case might help towards the establishment of the differential diagnosis between intra- and retro-labyrinthitis, inasmuch as in this instance the affection of the two nerves did not run a parallel course, but that the symptoms referable to the vestibular branch reached their maximum intensity earlier than those due to involvement of the auditory nerve, and he reminded the audience of the discussion which had taken place at their last meeting in this relation.¹

CONGENITAL DEFORMITY OF BOTH AURICLES WITH COMPLETE ATRESIA OF THE MEATUS; OPERATION ON ONE SIDE WITH IMPROVEMENT IN THE HEARING.

BY E. RUTTIN.

A boy, aged five, was brought on May 6 by his mother with the

¹ See report, JOURN. OF LARYNGOL., RHINOL., AND OTOL., December, 1909, p. 702.

request that an operation might be performed. He was admitted to the clinic and watched for some two weeks. It was found that the patient could hear no call or shout, but showed some response to a rattle or trumpet close to the ear. Rotation revealed a typical normal reaction on both sides. In spite of the inability to promise any result in the light of these circumstances, at the very urgent request of the mother that at least on one side something should be tried, Ruttin consented to operate. To this end he decided to try and manufacture a meatus with the hope of improving the hearing. The bony meatus was non-existent, and only represented by a strand of fibrous tissue and fat. The antrum was large and contained portions of the ossicles, consisting of an incus with a much attenuated long process and merely the articular surface of the malleus. These were removed, and from thence outwards a channel was formed and a meatus shaped by manipulation of the soft tissues. The day after the operation the boy could hear a shout at a distance of seven metres.

Ruttin considered that no rule could be laid down for any procedure in these cases, but that in many instances it was worth while to expose the antrum and be guided by the conditions there found as to any further procedure.

FISTULA IN THE AMPULLA OF THE SUPERIOR SEMI-CIRCULAR CANAL.

BY R. BÁRÁNY.

Three years ago the exhibitor had performed the radical operation on the left ear of this patient on account of chronic suppuration. A similar condition was also present at that time on the right side, and now an acute exacerbation had taken place, and a very marked fistula symptom was obtainable. At the radical operation, on the right side, a cholesteatoma was found in the antrum, the sinus lying exposed and surrounded with pus. After further exposure of the sinus it was discovered that it was occluded by a thrombus of an emissary vein in its immediate neighbourhood. This was removed and the sinus itself found to be quite healthy, so the jugular was not tied. On investigation of the tympanic cavity no fistula was seen in the usual situation over the horizontal canal, but over the ampulla of the superior canal. Since the patient was practically deaf in the left ear, and could still hear conversation at two metres with the right ear, the labyrinth was not disturbed. His hearing remains unchanged, and the fistula symptom is still present.

TWO CASES OF LABYRINTH FISTULA CORROBORATED BY OPERATION,
WITH PECULIAR RESPONSE TO GELLÉ'S TEST.

By R. BÁRÁNY.

Both these patients could hear, and the reaction to Gellé's test was abnormal. Aspiration and compression both produced an intensification of the tones, which could be with certainty demonstrated, and never gave rise to subjective noises. This all pointed to the conclusion that the diminution of the sound which occurred in Gellé's test was not due to any effect of the intra-labyrinth pressure. Also the fact that no subjective noises were produced during this experiment negatived the view that these were dependent on an increase of pressure within the labyrinth.

ALEX. R. TWEEDIE (*trans.*).

AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Thirty-first Annual Congress, held at the Harvard Medical School, Boston, Mass.,
May 31, June 1 and 2, 1909.*

(By courtesy of the *Medical Record*.)

PRESIDENT'S ADDRESS.

Dr. A. COOLIDGE, jun. (Boston), delivered this address. He spoke of the new Harvard buildings, in one of which the Congress had assembled, as a noble gift given in trust for the benefit of the profession as a whole. He spoke of the great number of new instruments devised for work in laryngology and rhinology, and said that enthusiasm sometimes carried the profession beyond the proper limits. Allusion was made to the recent death of Dr. F. I. Knight, of Boston, a founder of the Association, and one of the earliest and most successful teachers in America in this department. Information was given with reference to the courses of instruction in laryngology in the Harvard School, there being eight instructors engaged in the work. Dr. Coolidge thought that in connection with the more formal exercises of medical meetings much good might follow informal discussion in small groups and the explanation of favorite theories. It was recommended that the de Roaldes prize to be established by the Association should take the form of a medal. Attention was called also to the work of the committee on nomenclature.

NERVE DISTRIBUTION IN RELATION TO NERVE DISTURBANCES
SIMULATING LOCAL INFLAMMATION.

BY DR. A. A. BLISS (Philadelphia).

The complicated distribution of the nerves throughout the region of interest to the rhinologist was described. Pain in this region was not always due to occlusion or retained secretions. It might come from many sources and be reflected to some special area within the nasal territory. The onset of an acute rhinitis would develop a vicious circle, for sensory filaments of the ophthalmic and superior maxillary nerves reacted on the sympathetic plexuses, and we had vaso-motor irregularities which in themselves increased the irritability of the sensory nerves. In the majority of such attacks there was no exudation in the sinuses, but the pain there was due to involvement in some way of branches of the fifth pair. A safe guide for surgical intervention was the temperature range, duration, and continuance of pressure symptoms, and the mental state of the patient. The removal of impacted cerumen often cleared up a persistent cough. Often patients with supposed mastoid disease were operated on and no disease was found. Under such conditions we should always consider carefully the distribution of painful areas, and we were thus often brought to a discovery of some local cause which was causing a neuralgia, and nothing more. The so-called nasal cough was similarly explained. In some patients any irritation of the naso-palatine nerve, especially opposite the posterior half of the middle turbinate body, would develop this reflex coughing. Cough medicines in these cases were useless. Elongated uvulae might cause cough by flapping against the pharyngeal walls. The same principles applied to laryngeal areas. In supposed nasal sinus cases transillumination and the X rays were useful in aiding us to arrive at an accurate diagnosis, but they were far from being infallible guides. With all our modern mechanical aids we must depend largely on personal and direct observation, aided by clinical experience. Aggressive operators might be led astray by their surgical zeal and the apparent, though not real, reason for its exercise. Thus much unnecessary suffering might be inflicted by undue surgical intervention, the evil results of which might not be revealed to anyone unless to the conscience of the operator.

Dr. O. T. FREER (Chicago), said that there was a peculiar reflected pain in antral suppuration. It might often cause supra-orbital pain when the frontal sinus was intact. Antral inflammation did not always cause a rise of temperature. Very trivial intra-nasal catarrhs might

cause obstinate coughs. In America we said "sinusitis"; the German said "sinuitis." Which is correct?

Dr. W. L. BALLENGER (Chicago) said that in a personal communication from Dr. Duane, of New York, the latter had informed him that "sinuitis" was the more correct, though the word "sinusitis" had been in use so long as to obtain authority as being correct.

HÆMOPHILIA, WITH REMARKS ON THE HÆMORRHAGIC DIATHESIS.

By DR. THOMAS HUBBARD (Toledo).

The histories of two cases were related, one of distinctly hæmophilic tendency and the other showing epistaxis due to scorbutus. The first case was operated on for enlarged tonsils and adenoids. Both cases recovered. The author described the various means used to check hæmorrhage, including compression forceps, Mousel's solution, adrenalin, calcium lactate *per rectum*, etc. Bleeding was not from any particular vessel, and stitching the pillars together would not have stopped the bleeding. The author then discussed the general nature of the hæmophilic diathesis, which he divided into two classes: First, the pathological, or those cases in which there were unaccountable hæmorrhages into the skin, mucous membranes, joints, organs, etc., with or without peculiar inflammatory conditions, such as scurvy, purpura hæmorrhagica, and allied affections; and secondly, true hæmophilia, which was not a pathological process, but a permanent condition. A differential diagnosis between the two forms was necessary for intelligent treatment. The author then passed on to the treatment of hæmorrhage in general, saying that the first indication was to maintain the volume of the circulating medium by normal saline solution. For children small enemata of, say, four ounces were the best method, and such enemata might be given every two hours. If this failed, intracellular injections might be given, and in emergencies, intra-venous injections. Continuous irrigation of the rectum with the saline had been of value. Some authorities advised the injection of fresh human or horse-serum. If fresh serum was not available, diphtheria antitoxin had been given, but it was less efficacious. Transfusion of blood was perfectly practicable.

CLINICAL EXPERIENCE WITH CALCIUM LACTATE IN HÆMORRHAGES OF THE UPPER AIR TRACT.

By DR. WILLIAM K. SIMPSON (New York City).

The following conclusions were drawn: (1) Calcium lactate had

from a clinical experience a controlling influence in hastening the coagulation of the blood. (2) Its efficacy was more marked in hæmophilic cases when the coagulation was delayed than in cases of normal coagulation time. (3) In operations, especially on tonsils and adenoids, careful inquiry should be made relative to any hæmophilic heredity or tendency. (4) In suspicious cases the coagulation time should be determined before operation. (5) It was questionable whether such operations should be undertaken in hæmophilic cases other than under the most extreme urgency. Perhaps they were positively contra-indicated. (6) In all cases of operations for the removal of tonsils and adenoids, calcium lactate should be given for a period prior to and after the operation, both for its possible effect in diminishing the immediate hæmorrhage and in preventing secondary surface hæmorrhage. (7) Of the calcium salts the lactate was more positive in its results, more agreeable to administer, and less irritating to the stomach.

Dr. G. HUDSON MAKUEN (Philadelphia) said that he had no fear of hæmorrhage in ordinary cases if his patient was under general anæsthesia. It was then easy to pass a ligature or suture the pillars. He had used calcium chloride with marked success in nasal hæmorrhage.

Dr. GEORGE B. WOOD (Philadelphia) said that he had used thyroid extract in cases in which the clotting time of the blood was abnormally long. He now gave it for a short period before all his operations.

Various gentlemen testified to the value of the lactate in their personal experience.

Dr. J. O. ROE (Rochester) said that long before the calcium lactate was used he had been in the habit of giving chloride of sodium on the theory of the lowered specific gravity of the blood. He sutured the pillars in obstinate bleeding after tonsil operations. He had never failed to stop nasal bleeding by packing.

Dr. EMIL MAYER (New York) called attention to the effects of tags of tissue left after operation as being a cause of bleeding. Post-operative bleeding was not necessarily secondary hæmorrhage.

Dr. A. A. BLISS (Philadelphia) said that in hospital patients it was very difficult to secure the admission of a hæmophilic history. The poorer classes seemed to consider it a disgrace and concealed it. He had lost a case by being thus deceived.

Dr. W. E. CASSELBERRY (Chicago) felt that rather too much reliance had been placed on the calcium salts, for he had never observed any effect from the chloride. He had had no experience with the lactate. Most, if not all, hæmorrhage about the nose came from some small arterial twig. We should always be prepared with every device necessary to stop arterial hæmorrhage.

Dr. H. L. SWAIN (New Haven) said he believed that every hæmophilic had a different kind of blood-vessel from the ordinary person. Consequently mere drugs of any kind were without effect.

Dr. R. C. MYLES (New York) said that some patients became hæmophilias to all intents and purposes after they had lost a large amount of blood, but not till then. It was a wise plan to place some thin rubber-tissue against bleeding surfaces in the nose and pack against this.

FURTHER REPORT OF A CASE OF CANCER OF THE TONGUE.

BY DR. ROBERT C. MYLES (New York City).

This was a further report on a case already brought before the Association in 1907. About two months ago the patient consulted Dr. Myles, complaining of pain and soreness in the operation scar. There was a crater-like ulcer in the centre of the cicatrix about 8 mm. in diameter, but after the extraction of an irritating tooth the ulcer healed. In the interval since the first operation two and a half years ago the left side of the tongue had atrophied and shrunk until the base dropped back against the posterior pharyngeal wall, the side being about one third of an inch farther forward and downward than the other side at the base, while the tip of the same side, which was not removed, shrivelled, curled up, and became distorted. The resulting condition had caused the patient much discomfort in speaking and eating. This annoying condition had probably resulted from the removal of longitudinal muscular fibres and by cutting off the nerves and blood-vessels at the base of the tongue. Dr. Myles thought that it would have been better to remove the entire side of the tongue.

PROLONGED STYLOID PROCESS.

BY DR. CHARLES W. RICHARDSON (Washington, D.C.).

The history of one case was given, and reference made to other published cases, and to a reported case of complete ossification of the stylo-hyoid ligament. His own patient was a woman, aged twenty-five, who had had for some years irritation referable to the left tonsillar region, from which a long piece of bone had been removed some years previously. A recurrence of symptoms led her to seek further relief, and it appeared that just within the anterior tonsillar fold and parallel to its course there was a narrow, slightly movable bony ridge. Under cocaine the anterior fold was opened up its full length and the bony process exposed. The latter was removed by successive bites with bone forceps. Recovery was without incident.

Several of the members related similar cases from their own experience.

(To be continued.)

THIRD INTERNATIONAL LARYNGO-RHINOLOGICAL CONGRESS.

ACCORDING to communications received from the President of the International Committee, the Third Laryngo-Rhinological Congress will be held at Berlin in 1911. The Laryngological Society of Berlin has, at its general meeting of January 14 of the present year, expressed its great gratification that Berlin is to have the honour of receiving the Congress. The entire council of the Laryngological Society has constituted itself an executive committee for the Congress, and will be completed by the co-option of well-known German laryngologists. The Congress is to take place at the end of August or the beginning of September. Inquiries regarding the Congress to be addressed to the Secretary of the Executive Committee, Professor Rosenberg, 26 Schiffbauerdamm, Berlin NW. 6, or to Dr. Finder, 17 Nettelbeckstr., Berlin W. 62, Secretary to the International Committee, who has made himself responsible for the arrangement of the subjects for discussion and the openers.

Abstracts.

PHARYNX.

Chiari, O. (Wien).—*Hæmorrhage from the Upper Respiratory Tract, exclusive of the Nose.* "Monatssch. f. Ohren.," Year 43, No. 10.

This article forms a collection of Professor Chiari's own experience with various references in addition to the literature on the subject. He has never seen a fatal case of hæmorrhage either in his hospital or private practice after removal of tonsils or adenoids, although more than once such cases have necessitated some treatment in the way of caustic, cautery, the application of peroxide of hydrogen, or pressure. He avoids the use of sharp instruments for tonsillotomy after the age of forty-five, and only two so-called "tonsillectomies" have been performed in his clinic—a statement which may surprise the extremists in the advocacy of this operation.

Two instances of hæmorrhage from the hard palate were dependent on the presence of incipient angiomas and successfully controlled by cauterisation.

One case of peritonsillar abscess, for the relief of which an incision had been made in the usual way, bled for some forty-eight hours, and did not respond to any treatment until it was found that the source of the hæmorrhage was a small vessel immediately behind the anterior pillar of the fauces. In order to control this a curved needle was passed from behind forwards through the pillar, and the whole tissue thus included in a ligature, which procedure led to complete and instantaneous cure. Otherwise Chiari has never seen any trouble arise from bleeding after incision for quinsy.

As instances of bleeding from the larynx several references are given in which this occurred chiefly in connection with overstraining the voice

by singers, otherwise he would prefer to regard so-called "hæmorrhagic laryngitis" as really an advanced stage of laryngeal catarrh, although he has seen bleeding occur in connection with "laryngitis sicca," a condition which he remarks is seldom confined to the larynx, but usually is found in association with a similar state of affairs in the pharynx and nose.

Some cases are also quoted which there were good reasons for supposing were instances of vicarious menstruation.

As regards tubercular disease of the larynx, "It is remarkable," writes Chiari, "that tuberculous ulceration of the larynx almost never is the cause of any noteworthy bleeding." *Alex. R. Tweedie.*

von Lénárt, Z. (Budapest).—*Experimental Studies on the Connection between the Lymph-vessel Systems of the Nose and of the Tonsils.* "Arch. für Laryngol.," vol. xxi, Part III.

The writer made submucous injections of a variety of granular colouring materials in suspension into the nasal mucous membrane of rabbits, dogs, and young pigs. The points selected for injection were the ventral and dorsal turbinates, the septum, and the floor of the nasal cavity. The animals were killed after varying periods, and the tonsils were examined microscopically.

The following were the results of the experiments: (1) It was found that granular materials introduced into the nasal mucous membrane could reach the tonsils by way of the lymph-channels. Thus it is proved experimentally that in the tonsillitis which sometimes follows intra-nasal operations the lymphatic vessels supply the path of infection.

(2) The conclusions to which A. Most was led by his anatomical researches as to the direction of the lymph-stream of the nose and throat were confirmed.

(3) It was proved that foreign materials which enter the tonsils are in part extruded on to their surface.

(4) An intimate connection exists between the lymphatic vessels of both tonsils, for after unilateral injection the granules are found not only in the corresponding tonsil, but also in that of the opposite side.

Thomas Guthrie.

Levinstein, O. (Berlin).—*On what Histological Processes do Hyperplasia and Atrophy of the Human Palatal Tonsil depend?* "Arch. für Laryngol.," vol. xxii, Part I.

The writer finds that hyperplastic palatal tonsils are characterised as follows: (1) Active mitosis in the budding centres (Keimzentrum) of the follicles; (2) increase in size of the budding centres of the individual follicles; (3) increase in size of the follicles; (4) increase in number of the follicles.

Atrophy, on the other hand, is marked by—(1) absence of mitosis in the budding centres; (2) the latter tend to disappear; (3) the follicles become gradually smaller and less numerous; (4) evidences of formation of follicles are almost absent.

The process of involution of a hyperplastic tonsil presents precisely the same histological features as does atrophy taking place in a normal tonsil.

Thomas Guthrie.

Trapenard (Mentone).—*Two Cases of Hereditary Syphilis of the Naso-Pharynx Simulating Adenoids.* "Revue Hebdomadaire de Laryngol., d'Otol. et de Rhinol.," January 30, 1909.

The record of two cases occurring in children, aged eight and ten

respectively. Other recorded cases are mentioned, and it is pointed out that the true nature of the disease may be overlooked unless its occasional occurrence is borne in mind.

Chichele Nourse.

Gibb, J. S.—*Some Observations upon the Complete Extirpation of the Diseased Faucial Tonsil.* "Boston Med. and Surg. Journ.," December 2, 1909.

Based upon one hundred cases of tonsillectomy. From a study of these cases, the author contends that (1) tonsillectomy is the proper operation for the removal of diseased tonsils; (2) tonsillectomy, in the majority of cases, results in no more serious traumatism to the faucial tissues than does tonsillotomy; (3) in those cases in which marked systemic and faucial disturbance follows a tonsillectomy, it results from difficulty with adhesions, which cases are unsuited for tonsillotomy; (4) tonsillectomy is always a complete operation; and (5) hæmorrhage after tonsillectomy is slight, and largely under the control of the operator.

Macleod Yearsley.

- (1) **Leland, G. A.**—*Nasal and Naso-pharyngeal Conditions as Causative Factors in Middle-ear Disease.*
- (2) **Pierce, N. H.**—*Nasal and Pharyngeal Conditions as Causative Factors in Middle-ear Disease.*
- (3) **Packard, F. R.**—*The Importance of the Thorough Study of the Naso-pharynx in Treatment of Diseases of the Ear.*
"Boston Med. and Surg. Journ.," December 9, 1909.

Three important papers, with discussion. Ireland dwells on the loss of normal protection afforded by the Eustachian tube and the mechanism of its functions due to affections or abnormalities of the nose and naso-pharynx. He discusses the anatomy and functions of the tube, especially as regards normal ventilation and drainage of the middle ear. Earaches in children rarely or never occur without the presence of adenoids in Rosenmüller's fossa, and progressive deafness in older subjects is always accompanied by swollen mucous membrane in the sides of the naso-pharynx or by remains of adenoids or adhesions blocking Rosenmüller's fossa. Hence the rational method of treatment is to restore the movements of the Eustachian tube by relieving the sides of the naso-pharynx of growths, adhesions, and swellings. A second factor in the physiological protection of the middle ear is found in normal uninterrupted breathing. In normal respiration there is a continuous interchange of air in the accessory cavities, so that the middle ear may be considered as an accessory sinus of the nose. These conditions indicate the rational treatment, viz. restoration of the sides of the naso-pharynx to normal and establishment of nasal respiration, absolute and continuous. Symptoms referred to the ear are often caused by lesions elsewhere, as (1) pain (due to larynx, tonsils, lateral pharyngeal lymph-bands, pressure in nose, ethmoid or sphenoid regions, and teeth); (2) fulness in ear (reflex, from intra-nasal pressure); (3) tinnitus (roar, or low-toned pulsation due to increased circulation in the sides of the naso-pharynx; high-toned hiss, due to changes in the Eustachian tube); (4) vertigo (due to turbinal engorgement, pressure from ethmoiditis or frontal sinusitis).

Pierce draws attention to the important nervous conditions associated with hyperplasia by adenoids and tonsils, and to the Eustachian tonsil. In tubal insufficiency lies the key-stone of a great part of aural pathology.

He questions the theory of pressure vacuum in the tympanum as due to atmospheric absorption alone, considers Koerner's hypothesis as more probable, and likens the condition in the middle ear to that which occurs in the absorption of a pneumothorax. He believes that nasal obstructions *per se* do not cause aural disease, but that inflammatory (especially chronic inflammatory) conditions must also be present. He enumerates the causes of nasal insufficiency, and tries to place them in their proper relationship to aural disease. He believes that the idea of nasal insufficiency has been carried to unwarranted extremes by many operators, and urges that factors other than mechanical may cause the conditions which render the nasal and pharyngeal mucosa especially liable to inflammation.

Packard emphasises the necessity of a thorough examination of the naso-pharynx before treating any aural condition. He enumerates the pathological conditions in the naso-pharynx which may give rise to ear diseases, as (1) adenoids; (2) so-called catarrhal inflammations; (3) atrophic conditions of the mucous membrane; (4) tumours other than adenoids; (5) naso-pharyngeal adhesions. He concludes that (1) in every case of middle-ear disease an examination of the naso-pharynx should be made; (2) this examination should be by mirror and finger, both before and after cleansing of the naso-pharynx; (3) the existence of adhesions has been largely overlooked owing to difficulties of examination.

Macleod Yearsley.

NOSE.

Hoffmann, R. (Dresden).—*On Rhinophyma.* "Zeitschrift für Laryngol.," vol. ii, Part IV.

This paper consists in the main of a somewhat detailed account of the literature bearing upon the disease, and the various suggestions which have been put forward as to its pathology, causation, and treatment. The interest of the author in the condition was aroused by a case which came under his care. The patient, a man, aged sixty-seven, had suffered from nasal catarrh for twenty years, and for a like period from gastrointestinal troubles. The rhinophyma had been noticed for about two years, and was of moderate degree, but caused sufficient disfigurement to make the patient very anxious to be rid of it. Alcoholic excess and constant exposure to the weather were the probable causes of the complaint, while some importance should perhaps be ascribed to the old-standing nasal catarrh. Of the various operative measures which have been advocated, the author selected subcutaneous excision as practised by Braun. He performed the operation under local anaesthesia, and was very well satisfied with the result, which remained good twelve months later.

Thomas Guthrie.

Bernard, E. (Lille).—*A Case of Vascular Tumour of the Inferior Turbinal; Rouge's Operation; Cure.* "Revue Hebdomadaire de Laryngol., d'Otol. et de Rhinol.," February 6, 1909.

A child, aged fourteen, had a growth the size of a nut projecting from the left nostril. Nasal obstruction had been noticed two years before, first affecting the left side only, and gradually becoming complete. At the time of examination the left nasal fossa was completely filled by the tumour, and the septum was pushed over to the right. On several occasions portions had been removed with a snare. Rouge's operation was performed, and the tumour, which was developed at the expense of

the inferior turbinal, removed. The hæmorrhage was very free, and caused some difficulty. The growth consisted of fibrous issue permeated by very large blood-vessels, and covered by stratified epithelium.

Chichele Nourse.

Chavanne, F.—*Tubercular Tumours of the Nasal Fosse.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," August, 1909.

The author states that it has now become classical to divide the nasal tubercular manifestations into two classes: (1) Tuberculosis, properly so called, which appears in the form of tubercular ulceration and vegetating tuberculosis; (2) lupus, chronic tuberculosis, slightly virulent, running a slow course. The tuberculoma or vegetating variety is rare; out of 450 nasal growths examined Schoeffer only found 8 tuberculous, and up to the present the number recorded has not reached 70. The following case is quoted, illustrative of such growths: A woman, aged sixty, with previous tubercular history, had suffered from progressive nasal obstruction for a year and a half. There was excess of nasal mucous secretion. The voice was nasal in character. Slight intermittent epistaxis on the right side. Sometimes headache, but no pain in the nose or adjoining parts. Externally the aspect of the nose was normal. No trace of lupus or cicatrices either on nose or face. Anterior rhinoscopy. One observed a reddish tumour the size of a nut on the anterior inferior part of the quadrilateral cartilage, reaching over to the inferior turbinated body. Its surface, studded with little elevations, was elastic and bled slightly when touched with a probe. On the left side there was a tumour half the size of the former, somewhat pearly in appearance, occupying a similar position on the septum. It did not bleed either spontaneously or when probed. The nasal fosse were otherwise normal, as were the oro-pharynx, nasopharynx, and larynx. The growths were removed by the galvanic snare, followed by curettage and cauterisation of their points of attachment. Histological examination showed the growths to be composed of large masses of epithelioid cells and giant-cells; many newly formed vessels. No caseation; no vascular obliteration; no bacilli. There was no recurrence of the growths, but the patient succumbed to pulmonary phthisis three years later.

The pathogeny and classification of these tumours and the various views held thereon by various writers are discussed at length.

The author arrives at the following conclusions:

(1) That two forms of *nasal* tuberculosis may be legitimately distinguished: (a) Miliary tuberculosis; (b) chronic tuberculosis, represented here by the special clinical type, which is lupus.

(2) Growths of the nasal fossæ described as tuberculous and lupoid correspond to one and the same lesion. Resembling the other forms of this affection, they are almost always primary. Like them, again, their appearance may be heralded by the existence of a pre-bacillary ozenatous rhinitis, a variety of atrophic rhinitis, which is occasionally the initial stage of lupus. A copious bibliography is appended.

H. Clayton Fox.

TRACHEA AND ŒSOPHAGUS.

Pierre-Nadal, L. (Bordeaux).—*Contribution to the Study of the Physiology of the Œsophagus.* "Revue Hebdomadaire de Laryngologie, d'Otologie et de Rhinologie," January 30, 1909.

The question discussed is whether the lumen of the middle two thirds of the œsophagus is virtual or actual during repose. The conclusion is that in the normal subject, and in a state of repose, the lumen is entirely virtual.
Chichele Nourse.

Hirschland, L. (Wiesbaden).—*Two Cases Illustrating the Importance of the Direct Methods of Examination.* "Zeitschrift für Laryngologie," vol. ii, Part IV.

In the first case, that of a child, aged three, the symptoms were such as to suggest the possibility of a foreign body in the bronchus. Examination, however, with the bronchoscope through a low tracheotomy opening proved the condition to be that of rupture of a diseased bronchial gland into the right main bronchus. Recovery took place.

In the second case it was found possible by means of the direct methods to arrive at an accurate diagnosis in an obscure case in which an œsophageal abscess with rupture into the trachea had followed a burn by caustic soda.
Thomas Guthrie.

EAR.

Schoetz, W. (Heidelberg).—*Epidermic Cysts following Transplantation in the Cavity produced by the Radical Mastoid Operation.* "Archiv für Otologie," December, 1908.

In one case the cyst formed a swelling extending from the tip of the mastoid into the retro-mandibular fossa. The author thinks a portion of the plastic skin-flap may have been shut in under the Thiersch graft.

Dundas Grant.

Pistre, E. (Bordeaux).—*Pure Fibroma of the Auricle (Anti-helix).* "Revue Hebdomadaire de Laryngologie, d'Otologie et de Rhinologie," March 13, 1909.

The growth of the tumour followed a prick with a thorn of the *Cassia occidentalis*. Five days later a small growth appeared, which in ten days attained the size of a large cherry, attached by a small pedicle. The tumour was solid and quite spherical, very tough, and creaking under the knife. The section was yellowish-white, composed of numerous concentric fibres.
Chichele Nourse.

Zebrowski, A.—*A Case of Double-sided Mastoiditis after Traumatic Perforation of the Drum Membranes.* Quoted from "Gazeta Lekarska," 1909, No. 4; "St. Petersburg medical Week," xxxiv, 1909, S. 190.

The case is of interest owing to the rarity of complications which require operation occurring after traumatic rupture of the membrane. The patient, a soldier, was brought to hospital in an unconscious condition caused by a bomb explosion in Warsaw. The unconsciousness lasted some days. Thirteen days after the operation bilateral otorrhœa developed, and on examination a perforation was found in each membrane in the anterior inferior quadrant. The hearing was greatly impaired.

Evidence of mastoiditis developed and Schwartze's operation was performed on both sides. The author was of the opinion that the detonation of the bomb explosion caused a concussion of the labyrinth and middle ear and a rupture of both drums.

W. G. Porter.

Isemer, F. (Halle).—Further Clinical Experiences of Bier's Hyperæmic Treatment in Acute Suppuration of the Middle Ear. "Arch. f. Ohrenheilk.," Bd. 75, Heft 1 and 2, March, 1908, p. 95.

This is the second series of cases treated by the Bier method that Isemer has published, and as a result of his experience he condemns the treatment as treacherous. It rapidly and completely banishes all pain, and gives rise to a feeling of general comfort and well-being, and yet, as several of his detailed cases show, the suppuration may all the time be extending widely in the interior of the mastoid. Moreover, it may mask a cerebral abscess, for in those cases where deep-seated boring occipital headache persisting after the radical mastoid operation is the only sign of the brain-disease, the Bier treatment, by soothing this pain, gives rise to false feelings of security. Consequently, this special form of treatment should never be tried save on patients in hospital, and even then only with the utmost care and vigilance, lest grave symptoms should suddenly make their appearance.

Dan McKenzie.

Scott, Jas.—Acute Mastoid Suppuration and Suppuration in the Neck Treated with Staphylococcus Vaccine. "Brit. Med. Journ.," December 18, 1909.

Man, aged fifty-six; acute middle-ear suppuration, followed by mastoid involvement, which, on operation, proved to be of the Bezold variety. Operation done November 4, 1908; but suppuration, with fresh abscesses, continued until April 11, 1909, when cultures were taken and found to yield *Staphylococcus pyogenes albus*, *Diplococcus pneumoniae*, and a bacillus of undetermined species. On April 17 a dose of 50,000,000 staphylococcus vaccine was used, followed by 100,000,000 on April 24, and similar doses every-tenth day until he had received eight injections. After the fourth dose no discharge, and wound healed.

Macleod Yearsley.

Leidler, Rudolf (Vienna).—Otitic Gravitation (Subcephalic) Abscess. "Arch. f. Ohrenheilk.," Bd. 75, Heft 1 and 2, March, 1908, p. 14.

An exhaustive dissertation illustrated with reports of twelve cases, exemplifying the various types of otitic subcephalic abscess.

In addition to the familiar Bezold's abscess, pus issuing from a perforation in the mastoid process may travel—(1) into the parotid region, superficial to the masseter and opening through the skin of the face, or under the ramus of the jaw between the pterygoids to the mucous membrane of the cheek; (2) inward to the tonsil and soft palate, and thence to the retropharyngeal space (which may also be reached by extension of the inflammation along the Eustachian tube); (3) backwards along the digastric muscle or the occipital artery to the intermuscular tissue at the back of the neck. Further, the infection may extend to the soft structures of the neck by way of the internal jugular or mastoid emissary veins, or through the carotid canal. It is also pointed out that a wide extension is to be looked for if the pus finds its way into the so-called cervical cellular planes or clefts, the loose tissue of which favours a rapid spread of the infection. These clefts are as follows: (a) the retro-visceral or pre-vertebral, which leads into the posterior mediastinum; (b)

the pre-visceral, immediately in front of the larynx and trachea, which passes into the anterior mediastinum; (c) the peri-vascular, within the carotid sheath, which extends from the petrous bone above to the arch of the aorta below; (d) the intermuscular space of Henke, which leads either superficially over the clavicle, or along the omo-hyoid into the perivascular space, or down into the axilla.

With reference to treatment, the usual advice is given to open the mastoid process first of all and to follow up the pus in its burrowing, avoiding, as far as possible, the infliction of large or multiple incisions. The author very properly recalls to our memory the danger that is run when much pressure is applied to abscess-swellings in the neck before they have been opened.

Dan McKenzie.

Citelli, S. (Catania).—*A Case of Abscess at the Apex of the Mastoid Process, with a Deep Cervical Abscess, the result of Peri-sinusitis.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," February, 1909.

From anatomical researches eight years ago the author realised that a peri-sinusal abscess might, by extension outwards through pre-existing channels, give rise to a collection of pus at the tip of the mastoid process extending to the deep parts of the neck, resembling Bezold's abscess. He found that in 25 per cent. of crania the mastoid emissary vein emerged at a point beneath the sterno-cleido-mastoid, and generally in the neighbourhood of the temporo-occipital suture—in 2 per cent. dehiscences were present in this suture—and that rarely an emissary from the sigmoid sinus made its exit near the stylo-mastoid foramen; this he designated the "para-stylo-mastoid emissary." Pus having arrived externally by any of these routes will be situated beneath the sterno-mastoid, most frequently about the tip and posterior border of the mastoid, and if not dealt with early will extend down the neck alongside the carotid sheath, behaving precisely as a Bezold's abscess. The following is an illustrative case:

A man, aged fifty-seven, with a history of having contracted a cold two months previously, experienced painful twinges in the left ear, radiating over the corresponding half of the head. The pains increased, and soon afterwards a swelling appeared at the tip of the mastoid process. Several days previous to his entering hospital he had severe tinnitus, heaviness of the head, a guttural voice, dysphagia, mental dulness, with high fever. He had never had either aural discharge or vomiting. The neck was rigid from purulent infiltration. The drum-head of the affected side was intact, but infiltrated and bulging; the meatus was narrowed owing to sagging of the posterior superior wall. There was tumefaction about the tip of the mastoid and over almost the whole of the upper half of the neck. Pressure over the antrum and swollen parts gave rise to intense pain. Examination of the throat revealed a fluctuating swelling of the left side of the pharynx, which was opened at once; thick pus escaped. Paracentesis performed gave exit to pus. Kernig's sign negative; hearing for speech absent. The diagnosis made was acute suppuration of the middle ear, with Bezold's mastoiditis, lepto-meningitis, and otitic pharyngeal abscess.

Operation: A skin incision was made from just above the antrum downwards to the lower limit of the cervical swelling; the skin and periosteum were detached from the mastoid region. Neither cortical fistula nor pus were found, but on detaching the periosteum and over-

lying tissues backwards a little beyond the posterior border of the mastoid process pulsatile pus was observed issuing from a fistulous track, situated under the insertion of the sterno-mastoid at the lower extremity of the temporo-occipital suture. Pressure applied to the cervical swelling induced a flow of pus behind the tip of the mastoid process. On opening the mastoid the whole of the bone down to the apex was eburnated and healthy. The antrum was full of pus, which had given rise by extension through its posterior wall to a peri-sinusal abscess, involving the whole of the sigmoid sinus. The osseous fistula whence the pulsating pus escaped corresponded exactly to the lower extremity of the peri-sinusal abscess, and was no doubt the mastoid foramen. The base of the antrum and extra-sinusal abscess were freely opened. The sinus was not interfered with, there being pulsation and no pyæmic symptoms. The deep cervical abscess was opened to its lower extremity; an enormous quantity of pus escaped. The entire mastoid apex was removed; its cortex was perfectly intact. The abscess about the tip of the mastoid and neck had arisen from the peri-sinusal suppuration. The author observes that this form of cervical abscess, clinically identical with Bezold's, presents in its very early stage one slight difference, viz. that the tumefaction about the apex of the mastoid tends to spread behind the posterior border of the process; this is only appreciable at the very outset. *H. Clayton Fox.*

Kramm, S. (Berlin).—*Phlebitis without Thrombosis as a Cause of Obliteration of the Sinus in Children.* "Arch. of Otol.," December, 1908.

The author refers to instances of obliteration of the sigmoid sinus found accidentally at operation [the abstractor has found it *post mortem*]. He holds that it may take place through phlebitis and pressure by an extra-dural abscess. In the cases observed by him the subjects were children, aged respectively seven, nine, and eleven years, and an extra-dural abscess was either present or had presumably existed before the destruction of the bony sulcus. *Dundas Grant.*

Rimini (Trieste).—*Simple Orogenic Pyæmia without Sinus Phlebitis.* "Arch. de Laryngologie, etc.," tome xxviii, No. 4, July-August, 1909, p. 140.

A female, aged fifty-seven, the subject of chronic arthritis. Acute suppuration set in suddenly in left ear, with temperatures running between 103° and 104.4° F. Mastoid, tender on pressure. No operative treatment. Albuminuria on fourth day; swelling and tenderness in right leg on fifth day; collapse and death on the sixth day.

Post-mortem.—Brain, meninges, and lateral sinus all healthy. Purulent infiltration of muscles in right thigh. Bacteriological examination of ear-discharge and contents of the abscess in the thigh showed numerous diplo-streptococci. *Dan McKenzie.*

Vierhuff, Dr.—*Otitic Abscess or Encephalitis?* "St. Petersburg med. Wochens.," xxxiv, 1909, S. 13.

The patient, a male, aged twenty-eight, was sent to hospital with a diagnosis of brain abscess. There was a history of left-sided otorrhœa of six years' duration, with frequent attacks of giddiness for the past six months. The night previous to his admission he lost consciousness. On examination: Left ear, fetid pus, destruction of membrane; nervous system, reflexes absent; pupils react, no optic neuritis; pulse 64; temperature subnormal; cerebro-spinal fluid normal. The following day a

right-sided hemiplegia developed. Pulse 120, temperature 100.5° F. The next day the radical mastoid operation was performed and the brain explored without finding pus. Three days later the patient died. At the section hemorrhagic encephalitis was found.

The question is discussed, Was the encephalitis a result of the otorrhœa or not?
W. G. Porter.

Mosher, H. C.—*A Specimen of an Encapsulated Brain Abscess.* "Boston Med. and Surg. Journ.," July 15, 1909.

The specimen was taken from a man, aged forty, who had been operated upon for acute mastoid three months before. A brain abscess was evacuated by operation immediately. The patient became worse next day, after some amelioration, and was again explored, and an encapsulated abscess was discovered. The patient died forty-eight hours after admission. The pathological findings are described and illustrated by two excellent photographs.
Macleod Yearsley.

Jones, Ernest.—*The Differential Diagnosis of Cerebellar Tumours.* "Boston Med. and Surg. Journ.," August 26, 1909.

The comparative frequency of cerebellar tumours is shown by the fact that the author has seen sixteen cases in the past twelve months, and his remarks are based upon the study of twenty cases. An excellent and exhaustive account is given of the symptoms with the order of their diagnostic value, as (first) ataxia; then the characteristic vertigo, the hypotonia, paresis, nystagmus, and skin deviation. Differential diagnosis from supra-tentorial, parietal, frontal and other tumours is then discussed. Attention is especially paid to cerebello-pontine angle tumours with which paralysis of the seventh and eighth nerves practically always occurs. The paper is one that should be read by otologists with interest.

Macleod Yearsley.

Alskne.—*A Case of Otitis Media and Mastoiditis ending in Bilateral Blindness.* The Society of General Practitioners in Libau; Meeting held on May 1, 1908: "St. Petersburger med. Woch.," xxxiii, 1908, p. 739.

The author described a case in which he diagnosed thrombosis of the cavernous sinus. The patient, a soldier, aged twenty-four, came under observation on January 6, suffering from purulent discharge from the right ear and mastoiditis. The right eye was nearly quite blind, and the sight in the left was greatly impaired; optic neuritis was present on both sides. The author thought this was due to a thrombosis of the cavernous sinus following on one of the lateral sinus.

The lateral sinus was explored; it was very tense, and contained black fluid blood. The wound progressed favourably and the sight in the left eye improved at first, but later the headache returned and the sight was quite lost. The patient refused further operation.

W. G. Porter.

MISCELLANEOUS.

Feldt, Dr. A.—*Concerning Estoral and its Use in Laryngo-Rhinology.* "St. Petersburg. med. Wochenschr.," 1909, xxxiv, S. 377.

Estoral, the menthol ester of boric acid, $B(C_{10}H_{19}O)_3$, is a fine crystalline white powder, which smells strongly of menthol. It is soluble

in ether, benzine and chloroform, and in warm almond and olive oil. It can be obtained in the form of a salve and also as a snuff. Its action is that of menthol, but it is a more powerful disinfectant and is less irritating. The author gives details of twenty-three cases in which he has used the drug with benefit. The cases treated included ten of acute rhinitis and ten of chronic affections of the nose, such as ozaena and chronic rhinitis.

W. G. Porter.

Cushing, Prof. A. R.—*Tissue Antiseptics with Reference to Animal Infections.* "Lancet," January 23, 1909.

The micro-organisms of wound infection are more resistant to antiseptics than the tissues because they have, in course of time, evolved the power of protecting themselves against chemical poisons. It is otherwise with the animal infections of syphilis, malaria, and sleeping-sickness, which, being younger and less resistant than the bacteria, are more easily destroyed by drugs like quinine, arsenic, mercury, etc.

In a series of experiments on the treatment of trypanosomiasis in rats, the author found that after a continued course of one drug the organisms acquired the power of resisting it, although they were still susceptible of the action of the other poisons. This finding favours a return to the old polypharmacy, for in a patient treated with all the drugs combined few trypanosomes would resist the combined attack.

Dan McKenzie.

REVIEWS.

Tuberculosis of the Nose and Throat. By LORENZO B. LOCKARD, M.D. (With 85 illustrations, 64 of them in colours.) St. Louis: C. V. Mosby Medical Book and Publishing Co., 1909.

In this handsome volume the author reviews the history of the study of tuberculosis in the upper air-passages, their pathology, symptoms, diagnosis, prognosis, and treatment with the utmost fulness. The letterpress is replete with details of the views of others as well as those arrived at by himself. The richness of the letterpress is almost surpassed by that of the illustrations, the collection of beautifully coloured (some perhaps a little too high in tint) pictures of lesions of the larynx, nose, and pharynx forming a unique atlas of this department of medicine. An unusual amount of space is devoted to treatment, and the perusal of the book encourages the practitioner to proceed with an amount of hopefulness which other works are apt to damp. He gives good proofs for the faith that is in him, and his views on the therapeutics of the disease are well worth careful study. In regard to tuberculin, the author holds that we are not justified in considering the treatment as anything more than an adjuvant that may be of occasional service. While acknowledging the beneficial effect of lactic acid when judiciously applied, he has allowed it to be almost entirely supplanted in his practice by formaldehyde, both in the ulcerative and infiltrative types. He is not in favour of submucous injections (p. 216). In regard to possible benefit from photo-therapy, his observations lead him to consider sun-rays less useful than those of the arc-light. As a general rule he prefers cutting instruments to the electric cautery or electrolysis (p. 225). He is in favour of endo-laryngeal surgical methods in spite of theoretical objections. In amputation of the epiglottis he uses a special guillotine, and holds that although the prognosis in this operation is very unfavourable, except as regards relief

of pain, it results in permanent cure in about 10 per cent. of the cases in which it is performed (p. 239). The result depends on the condition of the other parts of the larynx, and the earlier the operation the better the effect. Tracheotomy is recommended, apart from other indications, in pregnant women with severe laryngeal tuberculosis, if the pregnancy is advanced (p. 252), but in the earlier months abortion is indicated. The chapter on tuberculosis of the nose is probably the most complete to be found in our language. The identity of lupus and tuberculosis is naturally accepted with the obvious results as regards diagnosis, treatment, and especially prognosis. The history of the development of this view is given with judicious condensation. The classification of cases as mainly local on the one hand, and mainly complications of general tuberculosis on the other, is well brought out in relation to prognosis and treatment. In the former, Onodi's recommendation to split open the nose and resect the nasal bone osteo-plastically is quoted with approval. Reference is made to the frequency of non-tuberculous sinusitis in tuberculous subjects, also to the great rarity of genuine tuberculous sinusitis. A valuable chapter is devoted to tuberculosis of the pharynx. Various observations concerning the occurrence of latent tuberculosis in the tonsils are detailed (p. 331), and evidence is adduced to show that general infection may frequently have its start in these organs. The numerous coloured illustrations of tuberculosis of the pharynx are quite admirable, and will be found most useful to those who may not have had opportunities of familiarising themselves with its appearances.

From what we have said our readers will see that the book is a very desirable addition to the library. D. G.

Tuberculin in Diagnosis and Treatment. By Dr. BANDELIER and Dr. ROEPKE. (Translated from the second German edition by EGBERT C. MORLAND, M.B., B.Sc.Lond., M.D.Berne). London: John Bale, Sons & Danielsson, Ltd., 1909.

The work of Dr. Bandelier and Roepke was at once adopted on the Continent as the standard treatise on the practical use of tuberculin both as a diagnostic and a therapeutical agent. Its translation by Dr. Egbert C. Morland is a service for which English-speaking practitioners have reason to be grateful. It includes a full discussion of the observations and studies which have led the authors to the conclusions at which they have arrived, and which are summarised in a manner that will make them most useful to the practitioner. As a general rule caution is inculcated, and the tuberculin treatment is recommended chiefly in those cases in which the course is practically a non-febrile one. A similar spirit pervades the account of its uses for diagnosis, the advantages and risks of the various methods being clearly stated. On the whole, von Pirquet's cutaneous test seems to have fewer contra-indications than any of the others in proportion to its comparative accuracy. The uses in diseases of the larynx and ear receive considerable attention and are set forth with commendable temperateness. In regard to treatment of laryngeal tuberculosis, the authors state (p. 158) that their standpoint, in brief, is that general, local, and tuberculin treatment must be combined and mutually assist each other. They consider that, with regard to tuberculin, "by lessening or abolishing the cough irritation, it prevents mechanical and inflammatory injury of the surface of the larynx, as well as the depositing of sputum in its lumen."

The book is got up in pleasant, readable form, and reflects great credit upon its publishers. D. G.

THE
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**THE ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER
FOR EDUCATION.**

THE Annual Report for 1908 of the Chief Medical Officer of the Board of Education has just been published, and the sections dealing with the nose and throat (pp. 57-9) and ear disease and hearing (pp. 61-4) are interesting reading.

The returns given from different parts of the country as to the prevalence of tonsils and adenoids vary as to the number of children affected, but from 8 to 10 per cent. of all children examined on admission into school appears to be the average. Comparisons between the returns from different counties, boroughs, and urban districts, though of little comparative value owing to the fact that the affected children are not classified in age-groups, are interesting. Flintshire is the lowest with 4.1 per cent., Lindsey highest with 15.7 per cent., whilst Middlesex comes close upon the latter with 13.7 per cent. Of boroughs and urban districts Aston Manor heads the list with 14.9 per cent., and Bradford, with 7.3 per cent., is the lowest. It is significant that at Bradford efficient medical inspection has been longest in existence.

One paragraph is pregnant with the importance of medical inspection. "There can, however, be but little doubt that with the facilities which medical inspection affords for interviewing the mother of the child, and the help that may be expected from the school nurse . . . , there will be less reluctance than heretofore on the part of parents to submit their children to operation." If this prophecy be fulfilled medical inspection will have an enor-

mous influence for good in the future condition of the ear, nose, and throat of our citizens.

The Report further points out that the treatment of tonsils and adenoids does not consist simply in their removal by the surgeon, but that breathing exercises and hygienic surroundings are necessary, and the excellent advice is given that, where possible, the child should be sent to an open-air school for one or two months.

In the section devoted to ear disease and hearing we find that returns show that otorrhœa is present in 1 out of every 60 children examined, in infants about 1 in 30. If we compare the county returns for ear discharge with those for adenoids, we find that Flintshire has only 1 in 117 (Lindsey and Middlesex are not given), and as this is the second lowest figure, Yorkshire (W.R.) being highest with 1 in 43, the importance of adenoids in causing ear disease is well shown. Of the towns, Bath is highest with the remarkable figure of 1 in 13. The gravity of the condition and the urgency for treatment is insisted upon.

As regards defective hearing, the approximate average is given as 5 per cent. of school children; the actual returns vary between 12.9 per cent. for Worcester and 1.0 per cent. for Leicester. The Report insists upon the examination of all children backward in speech, inattentive, dull, or backward at lessons, and of those whose parents give a history of deafness in the child. We are glad to read, in connection with testing, that "the ability of the child to hear the ticking of the watch at varying distances from the ear, though a very convenient method, is frequently fallacious, especially in the case of younger children. The test by means of the forced whisper is probably the most suitable one to adopt generally."

The foregoing remarks will show the enormous importance of school medical inspection to otologists and laryngologists, and the great promise it gives as to the prophylaxis of ear and nose diseases in future generations. It is sincerely to be hoped that this promise will be fulfilled, that medical inspection will grow and prosper, and that future governments will be manly enough, and far-sighted enough, to withstand the comment of ignorant parents whose votes they wish to retain, and will not, for party reasons, sacrifice it and with it the future good of the Nation. In a word, it is devoutly to be trusted that compulsory medical inspection may never meet the fate of compulsory vaccination.

MACLEOD YEARSLEY.

PARALYSES OF THE RECURRENT LARYNGEAL NERVE.

BY DR. JULES BROECKAERT (Gand).

Being an Abstract of a Paper communicated to the Section of Laryngology of the Sixteenth International Medical Congress at Buda-Pesth.

(Translated by K. DICKSON.)

I. RECURRENT PARALYSES OF CEREBRAL ORIGIN.

As the result of the combined experiences of different authorities, it has been found that the *centre which controls the movements of the vocal cords* in the dog is placed symmetrically on both sides of the median line, exclusively or predominantly in front and below the pre-crucial fissure. Without being able to deny that there are cortical centres which have an influence alone on the abduction of the vocal cords, or those upon which barking depends, their existence is, however, far from being demonstrable.

The great point for discussion is whether, as shown by Krause, each of the laryngo-phonation centres has a *bilateral action* on the glottic movements, or, on the contrary, if, as claimed by Masini, the action is *unilateral and crossed*. The disagreement which exists on this question is not of such importance as seems to be attributed to it, for, if it is proved that each of the cortical centres is bound by *connecting fibres* to the bulbar centres situated on the opposite side, that does not exclude the existence of *commissural or cullosal fibres*, which establish the connecting link between the cortical centres of the larynx situated in each of the hemispheres, nor the hypothesis that the laryngo-phonation bundle is composed chiefly of crossed fibres and of less numerous direct fibres, which undergo partial decussation in a sort of chiasma.

It can thus be understood that unilateral stimulation of a phonation centre by means of induced currents can produce a bilateral action on the two vocal cords, and that exceptionally, under the exact conditions indicated by Katzenstein, the current may follow exclusively the large tract which leads it to the bulbar centres without at the same time passing along the diverging tract of the commissural fibres.

Experiments on animals belonging to different species have shown that even bilateral destruction of the laryngeal centres is incapable of producing paralytic immobility of the vocal cords.

After ablation of the two hemispheres the respiratory movements of the cords persist as in the normal condition, and even the adduction of the cords is complete under the influence of a reflex cause. Extirpation of the laryngeal centres in the dog has hardly any influence on the movements of the vocal cords; it takes away from the animal the volition of movement of the cords necessary for phonation, and it suppresses, at least for some time, the function of barking.

So-called paralyzes of cerebral origin in man nearly always have the triple character of being unilateral, crossed and complete, the cord lying in the cadaveric position.

None of these observations will stand close criticism. Only Schütter's case, in which the central lesion was supposed to have produced paralysis of the constrictors with partial preservation of the action of abduction, merits particular attention.

All experimental research, as well as the actual teachings of neuro-pathology, formally contradict the clinical observations which tend to prove the existence of crossed laryngeal hemiplegia from a unilateral lesion of a single phonation centre. And since even the most extensive destruction of the cerebral laryngeal centres only suppresses the *voluntary* movements of the vocal cords, leaving unaffected the *reflex* mobility, it is logical to conclude that *absolute immobility of a vocal cord in the cadaveric position can on no account depend on a cerebral lesion.*

II. RECURRENT PARALYSES OF BULBAR ORIGIN.

The localisation of a laryngeal centre in the medulla is not yet established quite exactly. Is it in the *ambiguous nucleus*, as some claim, or in the *dorsal nucleus*, as the school of Louvain believed?

Experiments on the rabbit, which the author has performed, have shown that the avulsion of the recurrent in the middle of the neck is followed, at the end of from ten to eleven days, by very intense chromolytical changes in the cells of the dorsal nucleus, when at the same time the cells of the central or ambiguous nucleus seem absolutely healthy. This fact, duly ascertained, shows that, at least in the rabbit, the dorsal nucleus constitutes a bulbar laryngeal centre.

Is it the same in man?

The anatomical and pathological data collected from various publications do not make it possible to solve this problem. However, the result of a quite recent microscopical examination of

the medulla in a case of syringomyelia with laryngeal paralysis, which we owe to the kindness of Schrötter, proves that in man the destruction of the ambiguous nucleus is followed by immobility of the corresponding vocal cord. This fact tends to prove that the ambiguous nucleus in man constitutes a laryngeal centre.

Laryngoplegias of bulbar origin present the following characters:

(1) Whether unilateral or bilateral, these laryngoplegias are always situated on the same side as the bulbar lesion.

(2) The paralysis is complete or incomplete.

(3) The paralysed muscles become atrophied or lose their electric contractility.

(4) The paralysis is often associated with anaesthesia.

Semon's law, which sets forth that all acute or chronic affections in connection with the laryngo-motor tracts are to be accounted for at the very outset by the isolated affection of the abductor group, is very often in contradiction to the facts depending on bulbar lesions.

In literature there are numerous observations of recurrent lesions of bulbar origin, in which it is noted that the *constrictor muscles were alone affected* (Iranoff, Krause, Broadbent, Dreyfuss, Muntzer, etc.). This is not very surprising, as in the medulla the functional elements of respiration and phonation each have a course and localisations which are quite distinct.

III. RECURRENT PARALYSES OF PERIPHERAL ORIGIN.

Whatever may be the noxious lesion which attacks the *trunk* of the recurrent, there follow laryngo-motor disturbances, which are revealed by the laryngoscope as complete or incomplete paralyses of the vocal cord. If the conductivity of the nerve is suddenly suppressed, as may be caused by certain traumatisms, or even by certain morbid productions, the paralysis is of the *complete* type, and the vocal cord is found to be set in a fixed attitude, in the recognised position between that of phonation and that of deep inspiration. This position, which ought to be termed the *intermediary* position, does not at all correspond to what is found in the cadaver; the *cadaveric position* is not obtained except after simultaneous division of the recurrent and the superior laryngeal nerve.

In the immense majority of cases the different lesions which affect the *trunk* of the recurrent have the effect of slowly and progressively attacking the nerve in its functional activity. The

result is that the *paralytic stage*, which corresponds to the total destruction of the nerve, is preceded by a *pre-paralytic stage*, which lasts so long as the conductivity of the nerve is not entirely abolished, or the nerve-fibres are not definitely destroyed by an inflammatory process or degeneration.

If we refer to the numerous observations of progressive paralysis of the recurrent due to a peripheral lesion, it will be seen that the affections of the nerve in the case of *incomplete* paralysis do not always present themselves according to a set laryngoscopic formula which is always the same. By the side of the cases where a progressive diminution of the movements of the vocal cord is seen as the trunk becomes paralysed, there exist others in which the affection of the peripheral conductor is manifested by immobility of the vocal cord in the "median position." It is by disorders in the respiratory function rather than by vocal disturbances that incomplete paralysis of the recurrent is characterised.

Relying on these facts, and taking Rosenbach's ideas, Semon formulated in 1883 the celebrated law which bears his name, and which may be set forth as follows:

"In all peripheral or central affections which are progressive in their course, affecting the motor laryngeal tracts, the function of the dilators is always the first to be disturbed; this paralysis often remains confined, until the end of the disease, to the dilator muscles alone."

This law at once registers the *greater vulnerability of the abductor fibres*. Semon and his partisans admit that, in the case of a lesion attacking the recurrent nerve-trunk, the abductor elements undergo an involvement, if not exclusive, at least *always* stronger.

As a corollary to this law, they proclaim that *all partial lesions of the recurrent place the vocal cord in the median position*. After a more or less short phase, characterised by progressive diminution of the abductor movements, the posterior crico-arytenoid muscle is completely paralysed. From that time, according to Semon's theory, this *paralysis of the dilators* brings about fixation of the vocal cord in the median position, because the action of the constrictors is no longer counter-balanced by that of their antagonists, from which a *secondary contraction* — a *paralytic contraction* — results, due to the progressive shortening of the constrictors.

To bring this question to a point in order to make an impartial but concise criticism, all the *experimental data*, the *anatomical pathological data*, and the *clinical data* must be thoroughly studied.

A. *Experimental Data.*(1) *Is the Recurrent exclusively a Motor Nerve?*

In spite of the number and the value of the works inspired by this interesting question, the certain presence of centripetal fibres in the trunk of the recurrent is far from being solved.

The numerous experiments made for the purpose of deciding as to the exact nature of the recurrent nerve have shown the *discrepancy between the experimental data obtained in different kinds of animals*. Thus, it is shown, according to the experiments of Schültz and Dorendorf, that the trunk of the recurrent, in the rabbit, contains centripetal fibres; the same applies to the monkey and the cat. On the contrary, in the dog, the recent experiments of the author have confirmed the results obtained by Rethi, Katzenstein, Schültz and Dorendorf. In the dog the recurrent only contains sensory fibres in its peripheral portion; these fibres are, in reality, only sensory branches supplied to the recurrent by the medium of the loop of Galen. The author's experiments show equally that in the dog the recurrent does not take part in the sensory innervation of the larynx, this function being exclusively reserved to the superior laryngeal nerve.

The author's investigations have shown that in man the *trunk* of the recurrent is composed not only of *centrifugal* motor fibres supplying the muscles of the larynx, the trachea and the œsophagus, but also of *centripetal* fibres in connection particularly with the cellular elements of the glands and with the tracheal mucous membrane. In reality it is only after having given off its branches which supply the trachea and œsophagus that the recurrent becomes the nerve of the organ of phonation. It is in the upper part quite near the larynx, that the nerve-trunk ceases to be the recurrent, properly called the *œsophago-tracheo-laryngeal recurrent*, to become the *inferior laryngeal nerve*.

As the result of these investigations, it is seen that in man the *trunk of the recurrent is a mixed nerve*, which contains in a single bundle nearly all the motor nerves of the larynx, as well as the motor and sensory nerves supplying the trachea and œsophagus.

According to this the recurrent in man is like that of the rabbit, whilst it differs from the recurrent of the dog, in which the branches destined for the trachea are separate from the principal trunk.

(2) *How can the Median Position of the Vocal Cord be Produced Experimentally?*

Krause, and others after him, have tried to produce the median position of the vocal cord experimentally, by separating the recurrent in the dog, and attaching to it by a fairly tight string a piece of cork, which is left *in situ* in such a manner as to exercise moderate and continuous pressure on the nerve. The author has submitted these experiments to rigorous checking, and shows that the irritation exercised on the recurrent finally causes immobility of the vocal cord quite near the median line, after a phase of transitory paresis accompanied or not by spasmodic movements; the consequence of the consecutive destruction of the nerve is to cause the vocal cord to recede from this position of adduction and to become immobile in the position between phonation and respiration.

Whatever may be the value of this artificially produced process in the animal, the effects cannot be compared to the results of the slow and progressive pressure which is observed pathologically; for if there are cases in which the vocal cord becomes paralysed rapidly, there are others when the process evolves extremely slowly and where the irritation phase recurs; it seems to exceed to some extent the very short period in which the vocal cord, in the animals experimented on, was fixed in the median position.

(3) *What Position does the Vocal Cord occupy in a Case of Paralysis confined to the Posticus?*

Taking the experiments of Grossmann, Kuntner and Katzenstein, the author asserts that the experimental distribution of the posterior crico-arytænoids is incapable by itself of making the vocal cords immobile; even after months this elimination does not bring about fixation of the vocal cords from permanent contraction of the adductors; *the cords continue, although with less intensity*, the respiratory movements, and have only lost their movements of extreme abduction.

The results of experimental elimination of the posterior crico-arytænoid have given a severe blow to the theory of secondary contraction of the adductors, for, in spite of complete extirpation of this muscle, *not for one moment* is the cord found fixed in the median position.

(4) *Is the Posticus more Vulnerable than the other Muscles of the Larynx?*

If it is true that in the *cadaver* the posterior crico-arytenoids can lose their contractility more quickly than the other muscles of the larynx, it does not follow that in the *living subject* the abductor group is in a manifestly inferior condition; the incessant activity of the posticus muscle, on which rests, *during quiet respiration*, the maintenance of the opening of the glottis, may explain its more rapid loss of vitality *post-mortem*.

In the author's opinion no experiment has been made to establish the alleged inferiority of the neuro-muscular group of abduction to the antagonistic group of the adductors. On the contrary, in the opinion of Gad and Fränkel, refrigeration of the recurrent does not produce isolated paralysis of the dilator fibres as its first consequence, and that because of the greater vulnerability of the abductor fibres. The refrigeration necessarily has its effects on all the fibres of the nerve, as they are all closely amalgamated in a single conjoint bundle. A gradual diminution of the conducting power, attacking in the same degree all the nerve-fibres, is, therefore, the immediate result. Only, it is on account of the dynamic superiority of the constrictors over the dilators, by the persistent action of the ary-arytenoid and of the crico-thyroid, and by the irritation occurring in the centripetal fibres of the nerve, that the diminution, already appreciable, of the outward movements of the vocal cord is realised, while adduction is still carried on almost normally.

The author thus agrees with Gad and Fränkel as to the modifications in the glottis in the course of refrigeration of the recurrent; it is only the interpretation that differs.

It is the same with Frese's experiments, which are based, moreover, on the same principles as those of Gad and Fränkel. The application to the trunk of the nerve of various irritating substances does not show that there exists a very decided difference in the biological constitution of their recurrent fibres, nor that, of the two functional groups of the laryngo-motor apparatus, the one destined for abduction of the vocal cord should be the most vulnerable.

B. *Anatomico-pathological Data.*

The anatomico-pathological material concerning the recurrent paralyses of peripheral origin consists of two groups of distinct

elements, one group, on the one hand, obtained experimentally by section of the recurrent, and the other group, on the other hand, being in connection with cases of recurrent paralysis controlled by laryngoscopic examination and followed by an autopsy.

(1) *Experimental Material.*

The indisputable conclusion which can be drawn from experiments on the rabbit—micro-photography in addition to the study proving it in a decided manner—is that they have confirmed the fact that of all the muscles of the larynx the one which undergoes atrophy the most rapidly, the most constantly, and the most completely, is the *external thyro-arytænoid*. As to the results obtained in other animals, they also prove that it is the external thyro-arytænoid which reacts the most quickly, on account of nutritive disturbances, from section of the inferior laryngeal nerve, whilst the crico-arytænoid, that muscle which is said to be so vulnerable, has always shown in this case much less nutritive alteration.

(2) *Clinical Material.*

In this chapter an impartial study is made of all the documents which appear to have sufficient value to contribute, in a certain measure, to the solution of the problem of laryngeal paralyses. To the existing documents the author adds those derived from four personal cases.

In nearly all the cases the recurrent was found embedded in a mass of glands, the inflammation of which had spread to the nerve-trunk. It was at the level of the adherent or compressed segment of the trunk of the recurrent that the changes were the deepest. The nervous disorganisation, consisting chiefly of a fragmentation, and a chemical change of the myelin—fragmentation and resorption of the axis cylinder with multiplication of the nuclei—was found as far as the last peripheral ramification. The consequence of this destructive process—as far as it persists—is the complete disappearance of the organic part of all the nerve-fibres, and the loss of the function of conduction.

Not one observation showed that *certain nerve-fibres contained in the recurrent are more fragile or more vulnerable than others*. Even in those cases in which the lesion was quite recent, there never was to be seen, in the trunk of the recurrent, a group of unaffected fibres or those which had suffered less than others.

As a natural consequence of the interruption of the nerve-fibres, there were found in the muscles some regressive changes

going on as far as complete atrophy. *This atrophy was always found to be of the same degree in all muscles supplied by the recurrent.* Only if muscular atrophy took place in this manner, the same did not always hold good in the distribution of the phenomena of degeneration. In fact, *circulatory disturbances* may exercise, independently of the *neuropathic* disturbances, their injurious effect on the muscles; in the same way the degenerative changes of an eminently toxic character may be added to the simple trophic lesions, and thus greatly change the appearance of the muscles.

The result is that if at the autopsy the posticus muscle is found, for instance, atrophied to the same extent as the antagonists, but more degenerated, it must not be concluded that this muscle has been paralysed and has become separated from its connections with the motor neuron *before the others.*

To sum up, the most rigorous anatomo-pathological investigations do not give *any* argument in favour of Semon's law.

c. *Clinical Data.*

According to Semon's ideas, recurrent paralysis always begins with a progressive diminution of the abductor movements. Though rarely discovered by the laryngoscope, and even denied by Grossmann, there exists a *first stage*, characterised by *motor paresis*, revealed in the laryngoscope by a gradual diminution of the respiratory excursions. During forced respiration the vocal cord no longer passes outside the cadaveric position; soon it is noticed that the movements of abduction are more and more reduced, and at the end of a varying period the vocal cord, nearer the median line than is normal, only performs very slight oscillations.

The *second stage* is shown in the laryngoscope by the immobility of the vocal cord in what is called the *median position*. It is, in fact, a usual observation that at the commencement of paralysis of a recurrent, the vocal cord is placed, in some measure, *in a position more median than the so-called cadaveric position*; it is even to be noted that, in the *greater number* of cases, the vocal cord lies at a *certain distance* from the median line.

The characteristic symptom of this stage is the *sudden change* of voice; this sudden hoarseness rapidly becomes transformed into a *bitonal voice*. Dyspnœa is rarely met with at the commencement of paralysis of the recurrent of peripheral origin; even attacks of suffocation or crises of paroxysmal dyspnœa appear quite exceptional.

In the *third stage* the recurrent has quite lost its conducting power, and the corresponding vocal cord rests immobile in the so-called *cadaveric* position. The cord appears relaxed, narrow, shortened and depressed, the arytaenoid is sunk forwards, the result of which is to place the cord in a slightly different plane to that of the healthy side.

In order to understand the *mechanism* of the different positions of the vocal cord in cases of lesions attacking the trunk of the recurrent, the *hypothesis*—very ingenious, it is true, but wanting in proofs—that “the function of the dilators becomes affected first and that the constrictors only become affected later on” must not be resorted to.

When the recurrent is under the influence of compression, or when it is the seat of any other lesion which does not destroy the nerve *at the first outset*, it must be admitted, in conformity with the essential laws of neuro-pathology, that under the influence of this peripheral cause a *progressive motor paralysis* is established.

As fast as the motor fibres contained in the recurrent are affected in their functional activity, the muscles of the larynx become less and less capable of contraction; this state of the nerve is shown in the laryngoscope by a progressive diminution of the movements of the vocal cord. The lesion attacks, *in the same degree*, all the nerve-fibres, whatever be the muscles which they supply; the gradual loss of *trophic* influence, *stimulating* or *exciting*, occurs, therefore, in the same proportion in the abductor and adductor fibres. But thanks to the soundness of the ary-arytaenoid and crico-thyroid muscles, the action of which is added to that of the adductors, thanks to the dynamic superiority of the constrictors over the dilators, it is the respiratory excursions which appear, from the commencement, to be the most limited; it is easy to understand that adduction will still be carried on with a certain amount of energy when abduction will have become very difficult, even almost impossible.

Neither must it be lost sight of that the disorganisation of the trophic action and the exciting action which the peripheral motor neurons exercise over the muscles of the larynx is accompanied by progressive diminution, and finally by *suppression of the tonus of the dilators* which control, in the normal condition, the patency of the glottis; it is that which explains why the vocal cord tends to approach nearer and nearer to the median line in proportion as the paralysis of the nerve-trunk develops.

To explain the *immobility* of the vocal cord, whether in the median line, or quite near the median line, a distinction must be

made. When the vocal cord is immobile and *placed exactly in the median line*, this exceptional position must be looked upon as the effect of a *contracture*, depending either on a *direct peripheral irritation* of the nerve-trunk or on a *reflex irritation*. This irritation stage of the recurrent is generally wanting in cases of simple slow and progressive compression of the nerve; it may be observed, above all, in the course of neuritis of the recurrent nerve.

As regards the immobility of the vocal cord in a position *more or less approaching the median line*, this is the expression of a deep-seated change, but still incomplete, in the nerve. In fact, at a given moment, the dilator muscle, much paralysed, becomes incapable of still acting on the vocal cord, which is thus left to the action, more and more feeble, of the adductors, to which is added that of the ary-arytenoid and crico-thyroid; account must also be taken of the *reflex* action which the centripetal fibres contained in the trunk of the recurrent may exercise on the vocal cord.

Finally, when the paralysis is complete, that is to say, when the conductivity of the nerve is completely abolished, all reflex action ceases as a direct consequence, and the ary-arytenoid and crico-thyroid muscles can no longer, of themselves, maintain the cord in its relaxed position, and thus is produced the laryngoscopic image of total annihilation of the nerve.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Meeting, Friday, February 4, 1910.

DR. DUNDAS GRANT, *President, in the Chair.*

The following cases and specimens were shown :

FOREIGN BODY—A PIECE OF BONE IN RIGHT LUNG; PULMONARY ABSCESS; EMPYEMA; OPERATION; FOREIGN BODY COUGHED UP SIX WEEKS LATER, *i. e.* SIX MONTHS AFTER ITS ENTRY INTO THE BRONCHUS.

BY DR. H. J. DAVIS.

A man, aged fifty-three, was admitted into the hospital under the care of Dr. Seymour Taylor, with physical signs pointing to

empyema and pulmonary abscess right lung. Five months before this, while eating ox-tail soup, "a piece of bone slipped into his wind-pipe"; he coughed violently, choked, thought he was dying, but as he did not do so he continued his meal.

Beyond occasional paroxysms of coughing, nothing happened for five months, when he developed pleurisy; a week later he was admitted into the hospital with the condition above described.

A rib was resected. The empyema communicated with a large abscess cavity in the lung; this was drained. The discharge was so profuse that the wound was dressed three times a day. The patient was so ill that he could hardly be moved. On being turned over on his side, preparatory to a dressing, he coughed violently, "he felt the bone in his throat and he spat it out." His condition rapidly improved and he left the hospital well. Bone and photograph exhibited.

FOREIGN BODY—A PIN, $1\frac{1}{2}$ INCHES LONG, IMPACTED IN THE ŒSOPHAGUS; PIN GRASPED WITH FORCEPS BUT COULD NOT BE MOVED; ŒSOPHAGOSCOPY NEGATIVE; PIN PASSED INTO STOMACH AND VOMITED UP THE SAME NIGHT ON RECOVERY FROM ANÆSTHETIC.

BY DR. H. J. DAVIS.

Patient was a soldier, aged thirty. "He went to sleep on a sofa with a large pin between his teeth; it suddenly slipped down and he could feel it sticking into his throat at the root of the neck." Attempts had been made at two hospitals to remove it before he came to the West London.

Mr. Morton took an X-ray photo, and the pin could be seen head downwards with the point resting against the sixth vertebra.

Under chloroform the pin was grasped with forceps, but in spite of all manipulations it could not be removed, and fearing lest it should break he was sent back to the ward with $\frac{1}{4}$ gr. of morphia injection.

Later œsophagoscopy detected the exact point of the impaction, but the pin could not be seen.

A second X-ray photo showed everything clearly except the pin, which, it was assumed, must have been swallowed. On recovering from the anæsthetic he was very sick; "he felt the pin fly up into his throat and he took it out with his fingers." X-ray photograph and foreign body were exhibited.

Dr. WILLIAM HILL said that passing instruments into the œsophagus tended to displace the foreign body unless they were passed under

inspection, and thus we were balked of our quarry. Even in passing the œsophagoscope the foreign body not infrequently dropped down the gullet when the cricoid was pulled forward. He had recently seen this occur at St. Mary's Hospital in three cases on the one day. In two of the cases the foreign body was a bone. The accident could not, of course, be considered an unmixed blessing. In the third case, an open safety-pin had been swallowed, and gastrotomy was subsequently performed, but unnecessarily, as it had not been arrested in the stomach. It was ultimately voided.

Mr. H. TILLEY recalled a case in which a safety-pin had dropped into the open mouth of a baby six weeks old. The œsophagoscope in being inserted passed over the pin, but it was detected when the instrument was being brought out, and was successfully removed.

Dr. H. J. DAVIS, in reply, recommended that in order to prevent sepsis in cases where instruments had been passed into the œsophagus, according to a suggestion of Dr. Beddard, a solution of formalin in glycerine (1-2000) should be given to the patient with instructions to swallow it in sips.

FRACTURE OF HYOID BONE IN A MAN, AGED FIFTY-SIX ("GARROTTER'S THROAT").

BY DR. H. J. DAVIS.

The patient came complaining of a sore throat, "as the front wheel of a van had passed across his neck a week ago." Laryngeal and faucial examination showed nothing; no swelling and no lesion. On grasping the neck or swallowing he complained of great pain. An X-ray photo showed quite plainly a fracture of the body of the hyoid bone. X-ray plates and photographs were shown.

PEMPHIGUS VEGETANS AFFECTING THE LARYNX AND FAUCES, NASAL CAVITIES, TONGUE, CHEEK, AND LIPS OF A WOMAN, AGED FORTY.

BY DR. H. J. DAVIS.

The case was shown at the last November meeting (see *Proceedings*, vol. iii, No. 2, p. 22).

The patient left the hospital very much improved, but she had lately had a fresh outbreak on the skin. This had been accompanied by bronchitis (? spreading down of the bullæ into the tubes) and an outbreak in all other areas of the respiratory tract.

Dr. STCLAIRE THOMSON said that the case did not at present show the blebs that one was accustomed to associate with pemphigus as it affected the skin, because on the mucous surfaces the bullæ ruptured soon after they formed, leaving only a pellicle. The case had been fully discussed at a previous meeting, the bad prognosis of the disease being fully recognised.

Dr. W. HILL asked what was the state of the patient's general health and what treatment was being tried.

The PRESIDENT recalled a case which was under the care of a very eminent surgeon in a London hospital a number of years ago, in which the surgeon was so confident of the curative effect of arsenic, that, in order to demonstrate this to his pupils, he postponed administering the remedy to the patient for a fortnight, so that they might observe the intractability of the condition apart from treatment. The ethics of this proceeding gave rise to some comment.

Dr. H. J. DAVIS, in reply, said that the patient three months ago had been taken into hospital under Dr. Abrahams, and had been given large doses of arsenic, and, on Dr. StClair Thomson's suggestion, *mv* doses of *nepenthe* or *tc. opii*. Although she seemed about to die at the time, she recovered from that attack and left the wards. Three weeks ago another acute outbreak of bullæ took place, affecting the legs, nose, and probably the bronchi. At present only local treatment was being employed: glycerin, *ac. boric*, and orthoform for pain, the former being preferred. She would doubtless get over this attack also, but the ultimate prognosis was bad.

A CASE OF LARYNGEAL VERTIGO IN A MAN AGED FORTY-SEVEN.

BY DR. H. J. DAVIS.

This patient's condition when first seen was as follows:

(1) Severe subconjunctival hæmorrhages; (2) hæmorrhage from dilated veins in pharynx; (3) hæmorrhage into both vocal cords; (4) slight inguinal hernia; (5) numerous bruises, scalp wounds, etc., the result of falls.

He states "that a tickling begins in the throat, he coughs and coughs for five to ten minutes, he then becomes violently giddy, and he falls to the ground insensible; when he recovers in a minute or two all desire to cough has gone and he feels all right." He had his "uvula removed on Christmas Day after a severe attack." (This had been very liberally done, as the stump was flush with the palate), and he had been a little better since. In dry weather he was worse—he was a pipe smoker—"but the mere smell of cigarette smoke in a room or in the street brings on an attack at once." Though he might have several severe coughing paroxysms in the day "he had never fallen down unconscious more than once during the day." The patient was a big, heavy-looking man, with a very red face. The lungs were quite normal; and beyond an accentuated aortic second sound and exaggerated knee-jerks there were no signs of disease; no history of epilepsy in the family. The larynx, beyond the hæmorrhages on the cords, was normal; the pharynx was red and congested.

The condition was a very distressing one, and any hints with regard to treatment were welcomed, as he could not follow his occupation.

A mixture of syrup codeinæ ʒj, acid. hydrobrom. dil. ʒj, and aq. chlorof. ad ʒi, was ordered, and this had given him a little relief.

Dr. WATSON WILLIAMS said this was an interesting example of a rare disease. The story in all was the same and quite definite. The attack begins with a tickling cough, then vertigo comes on, and the patient drops down unconscious. It was not simply a matter of laryngeal spasm. No one, so far, had been able to give a convincing explanation of the pathology of the condition. In the present case there was one important point in the history which had not been mentioned. This was that six months before the first attack the patient had met with an accident. He had received a blow on the head which rendered him unconscious, and it was possible that the laryngeal attacks were the result of the shock received at that time. The speaker related a case he had seen in a boy at Clifton College, in whom the attacks could be induced by pressure upon the laryngo-tracheal region. Both in that and in the present case the attack was followed by increased micturition—an interesting point, although it did not throw much light upon the nature of the paroxysms. He advised that the condition should be treated as a neurosis; the general health should be built up, arsenic and bromides should be administered, and smoking should be stopped.

Dr. DE HAVILLAND HALL, remarking that the attacks seemed to be introduced by a dry, irritating cough, stated that he had found potass. iodid., gr. iv or v, with ammon. chlorid., gr. viii to x, of service in reducing the laryngeal irritation and the high arterial tension that frequently accompanied it. A linctus, containing trinitrine, $\mathfrak{m}_{\frac{1}{3}}$, and tinct. camph. eo., was also beneficial. How these remedies acted was unknown.

Dr. W. H. PEGLER, for hard, irritating cough, recommended *tc. catechu*, ʒj, in *tc. benzoïn eo.*, ʒj, $\mathfrak{m}_{\text{xxv}}$, on a piece of lump-sugar. It was an old-fashioned but efficacious remedy. He asked Dr. Davis if he knew what the uvula was like before removal, as some years ago he himself had had a severe case in a railway guard, in whom the removal of the uvula had entirely cured the symptoms.

Dr. FITZGERALD POWELL said that there had been many different opinions as to the pathogenesis of this condition; Charcot referred it to an irritation of the superior laryngeal nerve, and McBride supposed that the vertigo and unconsciousness were due to forced attempt at expiration through the closed cords. In the case under discussion there might be some focus of irritation in the nose, because the inhalation of cigarette smoke brought on the spasm. Semon had treated cases of laryngeal spasm by spraying the larynx with a 2 per cent. solution of cocaine with success. For the hard cough he advised a combination of citric acid, glycerine, and syrup of poppies.

Dr. SCHOLEFIELD related a case of laryngeal spasm he had seen in an old man, aged eighty-five, which, as the patient lived in a house where the children were suffering from whooping-cough, was first of all attributed to that disease. The paroxysms were very numerous—fifteen to sixteen a day—and began with a little tickling cough. As time went on the attacks were so severe as to render the patient unconscious, and gave rise to great anxiety as he was the subject of a weak heart. After a few months, however, the paroxysms became less severe and ultimately

disappeared. In the case under discussion it was noteworthy that the knee-jerks were exaggerated and there was ankle-clonus.

The PRESIDENT said some of these cases were syncopal in nature, but in the present case no doubt the vertigo was due to a disturbance in the cerebral circulation predisposed to by the arterial tension, and excited by the coughing effort. He was in favour of the treatment recommended by Dr. de Havilland Hall for the purpose of lowering the arterial tension, rather than the supportive treatment as recommended by another member.

Dr. H. J. DAVIS, in reply, said that this was a very typical case of laryngeal vertigo. It was not every irritation that induced the attack; tobacco smoke, for example, had no effect if it proceeded from a pipe, only if it came from a cigarette. During the paroxysm the man fell down unconscious, but, as he himself had observed, there was no sickness, nor did he bite his tongue or micturate. The uvula was said to have been very long before it was removed. He remembered in this connection another case in a prominent politician who had an enormous uvula which was removed by a prominent surgeon, and the collapse that followed this slight operation was as great as if the thigh had been amputated. At the same time, although relieved, the uvulotomy did not entirely cure the symptoms, and the patient had to retire from public life. In the present case the chief complaint made by the patient was that his eyes got red and bloodshot after the attacks, and as a consequence no customers would come into his shop.

LARGE TUBERCULAR ULCER ON RIGHT SIDE OF TONGUE IN A MAN,
AGED FORTY-TWO.

BY DR. H. J. DAVIS.

The patient had laryngeal tuberculosis and physical signs of chronic phthisis at both apices. There was a large, flat, oval ulcer on the right side of the tongue which might easily escape detection. The position was an unusual one for tuberculosis, the dorsum and tip of the tongue being, as a rule, the favoured areas. The patient did not look ill, and he was not wasting, but he could only eat with great difficulty. The pain in the ear of which he complained was at once relieved by applying cocaine to the ulcer.

Dr. WATSON WILLIAMS asked what was the evidence which led to the ulcer being called tuberculous: it might be septic simply.

The PRESIDENT thought the ulcer presented many of the features of malignant disease.

Dr. H. J. DAVIS, in reply, said the ulcer was now a little better than when first it was observed. He also had been suspicious at first of its being malignant, but the severe pain was suggestive of tuberculosis; besides, there was no limitation of movement of the tongue, and there were no enlarged glands in the neck.

LEUCOPLAKIA (?) OF THE SOFT PALATE.

BY DR. ANDREW WYLIE.

The exhibitor considered that the case resembled a leucoplakic condition of the mucous membrane, which is described by Butlin and others as terminating in epithelioma, and had delayed removing a piece for microscopic examination until the case had been shown to the Section. Dr. Wingrave had examined a surface scraping of the ulcer and reported no tubercle or spirochaeta. The patient, a man, aged sixty-seven, complained of pain on taking solid food for the last four months. He was otherwise well. There was no loss of weight, no glandular enlargement, and no specific history. The patient smoked half an ounce of tobacco per day, and, having no teeth, inserted the stem of his pipe a considerable distance into his mouth. On examination, a superficial ulcerated spot about the size of a sixpence was visible on the right side of the soft palate, extending to the middle line. On the edge of the ulcer, especially on the right side, there was a whitish, horny epithelium, which was more apparent three weeks ago. The palate moved freely, and on palpation there was no hardness. The case had been under observation for three months, and although treated by local applications of chloride of zinc, internal administration of potass. iodid., a soft diet, and total abstinence from smoking, the condition had not improved.

The PRESIDENT considered the case analogous with one he had himself exhibited at a recent meeting, in which there was an irregular red excoriation of the posterior part of the palate with a leucoplakic condition of the anterior part. He thought his own case might have been the buccal manifestation of a skin disease, but the patient, like Dr. Wylie's, smoked to an excessive extent. He did not think that Dr. Wylie's case was at the present time malignant.

Dr. DONELAN remarked that Butlin had termed the condition leukoma and not leukoplakia. He was inclined to think that this was a smoker's patch.

Dr. A. WYLIE said he intended to remove a piece and to have it examined microscopically.

PHOTOGRAPH OF AN INFANT, THE SUBJECT OF A RARE CONGENITAL DEFORMITY OF THE NOSE.

BY MR. GEORGE WILKINSON.

The infant was eight months old at the time the photograph was taken. The deformity consisted of a deep depression in the middle line of the nose, with wide separation of the nostrils, and flattening and broadening of the whole feature. The nose was 3 cm. wide at

the level of the alæ, but only projected about 1 cm., the greatest projection being on either side of the middle line in front of each nostril. These two prominences were separated by a depression of the tip of the nose 2 cm. wide. The nasal lines and nasal processes of the superior maxillæ were flattened. There was no separation between the nasal bones. The columella was 2 cm. broad, and the anterior nasal spine could be felt behind the columella as a broad projection of bone, about $1\frac{1}{2}$ cm. from side to side. On inspection of the nasal passages the anterior ends of the nasal septum could be seen as a prominent ridge on the inner side of each vestibule. The two sides of the septum were evidently separated from each other. There was no nasal obstruction. On everting the upper lip a distinct notch on the buccal surface in the very centre of the lip could be seen. There was also a well-marked notch in the middle line of the alveolar process. The two halves of the alveolus were not in alignment, but met with a forward pointing angle. Two upper incisors could be felt under the gum on either side of the mesial notch, showing that this represented a division between the two halves of the premaxillary bone.

The condition was obviously the result of a developmental error, consisting in the non-approximation of the fronto-nasal processes of either side. It had recently been described in an article by Professor Keith in the *British Medical Journal*,¹ and that writer had remarked that no specimen of this deformity, nor of dermoid or median fistula of the nose, was to be found in any of the London museums.

Dr. WATSON WILLIAMS said that an adult showing an exactly similar condition had been exhibited by Mr. R. H. Stewart some years ago.

Dr. W. HILL asked what treatment the exhibitor proposed to adopt. In the case mentioned by Dr. Watson Williams, Mr. Stewart had operated with considerable benefit.

Dr. DAX MCKENZIE asked what the septum was like, as, in view of a recent discussion in the Section upon nasal deformities consequent upon the submucous resection, the point was one of considerable importance.

Dr. W. H. PEGLER circulated a photograph of Mr. Stewart's case, and—

The PRESIDENT asked what was likely to be the best time for operating upon these cases.

Mr. WILKINSON, in reply, said that the septum measured 2 cm. across, and the cartilages could be felt projecting on either side of the anterior nasal spine. By way of treatment he had considered the question of operation, but had decided against it, because if, as he had intended, the cartilages were united by sutures, then the narrowing of the nose would of necessity have reduced the anterior nares to slits which would have been too small for breathing. Consequently he decided to have a truss

¹ August 7-14, 1909.

made, which would exercise concentric pressure upon the malar bones and sides of the nose, in the hope that this would in time lead to an approximation of the separated elements.

LYMPHO-SARCOMA OF THE TONSIL: REMOVED BY LATERAL PHARYNGOTOMY AFTER VOHSEN'S METHOD.

BY MR. GEORGE WILKINSON.

From a married woman, aged thirty-seven. Two months' history. Tumour the size of a large walnut occupying the right tonsil, and filling the right half of the fauces. The mass was well-defined from the surrounding tissues, but firmly fixed. Decidedly tender to touch. No palpable enlargement of glands. After preliminary clearing of the mouth of septic teeth, the patient was operated upon on October 13th. Semi-reclining position. Chloroform. Incision from tip of mastoid to great cornu of hyoid, then curving forwards and upwards for one inch. External carotid isolated, and the lingual, facial, and ascending pharyngeal branches ligatured. The jaw was divided in front of the attachment of the masseter, and the ascending ramus pulled strongly forward over the horizontal ramus (Vohsen's procedure). There was now good room to work towards the pharyngeal wall, and the tonsil was readily dissected out and removed, along with two slightly enlarged glands which overlay it. Pharyngeal wound sutured with catgut, and the jaw with silver wire. Pharynx healed in a fortnight without suppuration or any escape of fluid from the mouth through the wound. After a fortnight an abscess formed over the jaw, and the silver wire and a small sequestrum had subsequently to be removed. The microscope showed the tumour to be a lympho-sarcoma. Vohsen's operation, which was described in an abstract in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOLOGY, by Mr. Thos. Guthrie last year,¹ is less severe than that of Mikulicz, in which the ramus is resected.

LUPUS OF THE NOSE, HARD PALATE, FAUCES, AND EPIGLOTTIS, IN A GIRL, AGED TEN.

BY MR. STUART-LOW.

There were two interesting features in this case: First, the early implication of the epiglottis; second, that the child's father is living and healthy, but the mother's first husband succumbed to phthisis pulmonalis.

¹ March, 1909, p. 166.

Mr. D. VINRACE asked whether the "early" implication had reference to the period of the disease or to the age of the patient. He had observed a patch of lupus on the child's thigh, and asked in what order the symptoms had appeared.

Dr. W. H. KELSON said he had shown, in June, 1904, a similar case in a boy aged 12 years, which he had been able to cure with the galvano-cautery. But the disease reappeared on the gums, and the patient was sent to Dr. Sequeira for the light-treatment. Arsenic had a remarkable effect upon these cases.

Mr. HAROLD BARWELL recommended that before resorting to local treatment such cases should be submitted to general treatment by arsenic, and in a sanatorium. If this was done it would be found that local treatment was frequently unnecessary, or, at the most, that it would be limited.

Mr. W. STUART-LOW, in reply, said that the term "early" had reference both to the period of the disease and to the age of the patient. As regards sanatorium treatment, there seemed to be considerable differences of opinion. It was a suggestive fact in the history of the case that the child had played about on the floor of the room in which the man had died of phthisis. The disease had begun in the nose.

CASE OF EXTENSIVE TUBERCULOSIS OF THE LARYNX IN A MIDDLE-AGED MAN WITH RAPID EVOLUTION, SHOWING ALMOST COMPLETE RECOVERY; GALVANO-CAUSTIC TREATMENT.

BY DR. DUNDAS GRANT.

The patient, a man, aged fifty-five, was first seen by the exhibitor in July, 1909, complaining of something forming in the left side of his throat, thickness of voice, and a pain during swallowing running up to the left ear, so great as to make eating and drinking, as he said, impossible. His illness began with an attack of influenza in December, 1908, and with hæmoptysis (to the extent of half a gallon) in March, 1909, from which time the throat became dry and gradually painful, while the voice became hoarse. The exhibitor's colleague, Dr. Fenton, found dulness of both apices and crepitations at the right apex, and the patient had diminished in weight from 10 st. 4 lb. to 8 st. 7½ lb. There was no family tendency to tuberculosis, but on inquiry it was elicited that, in his business as a house-painter and paper-hanger, he had had to work in close contact with a man who was apparently the subject of pulmonary tuberculosis. When he was first seen there was enormous infiltration of the epiglottis, of both ary-epiglottic folds, and particularly of the left ventricular band, on which there was a well-marked irregular ulcer, while at the junction of the epiglottis with the right ary-epiglottic fold there was a circumscribed mass of infiltration amounting to a tuberculoma. The condition looked an

extremely hopeless one, but the exhibitor decided to try the effect of the galvano-cautery, and this was applied freely into the ulcer on the ventricular band, while two galvano-caustic punctures were made into the epiglottis. The patient received almost instant temporary relief from his pain, and he was ordered to inhale into his larynx, by means of Ledue's tube, a powder consisting of equal parts of anæsthesin and orthoform. This relieved him at first only for a few minutes at a time, but sufficiently to enable him to consume a small meal. Later the relief lasted for an hour, then from one meal to another, and of late he has been able to eat and drink without it, though he found it advisable to use it once a day. From the time of the first cauterisation, on July 20, to August 10 the pain was considerably diminished. There was then still considerable, though less, infiltration of the epiglottis; the tuberculous swelling had diminished, but close to its site there was a distinct loss of substance, in fact an irregular ulcer. The galvano-cautery was then applied to this ulcer, and punctures were made into the epiglottis and ventricular band. In the beginning of September the cauterisation was repeated, and after this the pain gradually died away. At the present time the epiglottis had returned nearly to the normal thickness, but was somewhat distorted by the cicatrix on its left side at the spot where the tuberculous ulcer previously existed.

There was now no ulceration whatever; both cords were visible; there was a slight infiltration of the ary-epiglottic folds, but they were apparently quite soft and elastic. The patient had been at work all the time, and there was every reason for supposing that his recovery was to a great extent attributable to the local treatment. The case was brought forward as offering encouragement, even when the laryngeal condition was of considerable extent; probably the absence of a family constitutional tendency and the "accidental" nature of the infection were favourable elements in the case. The patient was the father of thirteen children, of whom six died in early infancy, the survivors, however, being in sound health. There was no history of specific infection.

A MEMBER remarked that the case was doing very well. He himself had found that after cauterising the larynx a considerable amount of reaction followed. He asked the exhibitor how often the cautery should be applied, whether the application endangered the arytenoid region, and how long the treatment should be continued.

The PRESIDENT replied that he had been surprised at the singular absence of reaction after galvano-caustic puncture of tuberculous infiltration in the larynx. The immediate relief of symptoms was most striking.

He was unable to say how long the cauterising might be continued, but he did not repeat it at a shorter interval than three, or occasionally, two weeks.

EXTENSIVE FRACTURE OF NASAL SEPTUM, COMPLICATING MAXILLARY SUPPURATION IN WOMAN, AGED THIRTY-NINE; OPERATION; RECOVERY.

BY DR. DONELAN.

The PRESIDENT having asked for some particulars of the operation,

Dr. DONELAN said that five years ago the patient had been thrown out of a trap and had suffered from nasal obstruction on the right side ever since. She had come to him recently on account of a purulent discharge from the nose, which on examination was found to proceed from the antrum. The septum presented a complicated appearance; the perpendicular plate of the ethmoid had been fractured, and the fragment, separated from the septal cartilage and from the vomer, was displaced to the right side, and had formed an adhesion with the middle turbinal; the upper portion of the septal cartilage, in its turn, dislocated to the right, had become adherent to the inferior turbinal on that side, while lower down another fragment of the septal cartilage had been driven towards the left side and was adherent to the left inferior turbinal. In order to obtain access to the suppurating antrum it had been necessary to straighten the septum, and this had been accomplished by dividing the various adhesions that had formed, and by a series of four sub-mucous resections of the septum. Then the antrum was entered from the nose, a permanent opening being made for drainage.

A CASE OF PARESIS OF PALATE, PHARYNX, AND ESOPHAGUS.

BY DR. KELSON.

A. C.—, man, aged twenty-six, a clerk, attacked with sore throat fourteen days before Christmas. About Christmas-time food and drink began to come back through the nose; liquids particularly at once set up coughing and returned; his voice also became a whisper. Notes on admittance to hospital, January 21: Pulse irregular, 84; temperature 98.4° F.; lungs normal. The palate moved but very slightly; pharynx anaesthetic and motionless. Vocal cords moved well but looked red and swollen; glottis elliptical. A quantity of muco-pus about the upper opening of the larynx. The patient felt generally weak, but knee-jerks present. No eye symptoms; urine contained a small quantity of albumen; swallowed slowly; no Klebs-Loeffler bacilli. January 18, patient was taking liq. strychninae mix, and was rather better.

The PRESIDENT thought the case must be one of post-diphtheritic paralysis, though the typical eye symptoms were absent.

Dr. H. J. DAVIS thought that the case was undoubtedly one of post-

diphtheritic paralysis. He advised the administration of strychnine hypodermically instead of by the mouth.

Dr. WATSON WILLIAMS said that these cases were always due to the diphtheria bacillus. Iron and nux vomica were valuable remedies in these conditions.

Dr. KELSON replied that the evidence in favour of diphtheria was very slight, and he was rather of the opinion that the paresis was post-influenzal.

CONGENITAL OCCLUSION OF THE LEFT POSTERIOR NARES.

BY DR. DAN MCKENZIE.

Girl, aged nineteen. Had never been able to breathe through the left side of the nose. On anterior rhinoscopy the septum was found to be deviated to the left, and on posterior rhinoscopy the left choana was seen to be completely obstructed. Acting upon the advice of Dr. Dundas Grant, the exhibitor first of all performed submucous resection, removing the vomerine segment of the septum as far back as he could reach. Some weeks later the choanal diaphragm, which proved to be osseo-membranous in structure, was cut through with a chisel, and the opening so made was enlarged with a burr, under the guidance of the finger in the naso-pharynx, to the approximately normal dimensions of the choana. A large-size drainage-tube inserted through the breach the day after the operation proved to be intolerable and had to be removed after twenty-four hours. Nevertheless, the result had fully realised expectation, and the patient could now breathe comfortably through both sides of the nose.

Dr. D. R. PATERSON asked whether any asymmetry of the palate had been noticed in the case. He advised that in order to demonstrate such asymmetry a cast should be taken of the palate.

Mr. HAROLD BARWELL had shown a similar case eighteen months ago, upon which he also had operated successfully. He had not found the insertion of a tube to be necessary. He drew attention to the absence of deafness on the affected side.

Dr. H. J. DAVIS had also operated successfully on a similar case, but without resecting the septum. He asked why this had been done.

Dr. DAN MCKENZIE, in reply, said that the septum had been resected in order to afford a free approach to the obstruction. The palate in this case showed some asymmetry.

CASE FOR DIAGNOSIS.

BY DR. ATWOOD THORNE.

Woman, aged fifty; looked older. Difficulty in swallowing eighteen years. Nine years ago was told she had stricture of the

gullet: tubes were passed and she improved. At intervals the difficulty in swallowing became worse, then a "lump came away from the throat," and she swallowed better.

On examination, a mass could be seen in the posterior pharyngeal wall of the appearance, colour, and size of half a peeled walnut. Case and microscopical specimen exhibited. The exhibitor asked for opinions on the nature of the tumour, as many had been disposed to consider it malignant.

The PRESIDENT considered the condition to be one of a gigantic papilloma.

Dr. DONELAN asked what was the "lump" that came away from the throat.

Dr. W. H. PEGLER advised that a microscopic examination be made.

A MAN WITH EXTENSION OF THE SKIN INSIDE THE NOSTRILS.

BY DR. DONELAN.

Dr. D. R. PATERSON observed that the face showed indications of seborrhoea, and he suggested that this disease, extending to the skin of the vestibule, was responsible for the crust-formation of which the patient complained.

Dr. W. H. PEGLER asked what grounds there were for supposing that the skin had extended into the nose. There was some increase in the folds of the linen.

SYPHILITIC HYPERTROPHIC LARYNGITIS WITH POST-CRICOID STENOSIS OF THE PHARYNX IN A WOMAN.

BY DR. WILLIAM HILL.

Dr. HILL expressed himself as not quite easy in his mind with regard to the patient's safety. There was a considerable amount of laryngeal spasm and consequently some danger of asphyxia. He asked whether intubation should be tried in order to hasten the response to treatment. The post-cricoidal region was very narrow, but not from the presence of a gumma.

The PRESIDENT considered the condition to be a pachydermic laryngitis secondary to suppurative in the nasal cavities. The symptoms in such cases were usually most marked in winter.

Mr. WILKINSON remarked that crusts also came from the throat.

Mr. H. TILLEY referred to a similar case he had seen in which alcohol had proved to be a factor in the case, as the *post-mortem* showed. This case had frequently been mentioned before; it was that which had been fully described by Dr. Jobson Horne and in which the laryngeal hypertrophy was part and parcel of a general dyscrasia.

PAPILLOMATOUS OUTGROWTH OF THE RIGHT VOCAL CORD AND FLOOR
OF THE RIGHT VENTRICLE.

BY DR. WILLIAM HILL.

The PRESIDENT considered the smoothness of the growth as indicative of a fibroma rather than a papilloma.

Dr. HILL said that he also had been struck with the smooth appearance presented by the tumour when it was viewed in the laryngeal mirror, but a papilloid surface was found to be plainly visible when it was looked at by the direct method.

Dr. W. H. PEGLER had noticed that the growth showed a distinct cauliflower surface even on indirect inspection.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL
SECTION.

Saturday, February 5, 1910.

DR. EDWARD LAW, *President, in the Chair.*

The following cases and specimens were shown :

A DEMONSTRATION, WITH LANTERN-SLIDES, "SOME ANATOMICAL AND
PATHOLOGICAL PREPARATIONS."

BY MR. SYDNEY SCOTT.

(1) A section was shown of the antrum and accessory mastoid cells removed from a boy who had died of scarlet fever; in the preparation a mass of long-chained streptococci was visible, resembling the so-called "conglomerate" streptococci. Klein had isolated a streptococcus from cases of scarlet fever, and Kort recognised them as the conglomerate. But whether these now shown on the screen were Kort's or Klein's was doubtful; other streptococci might show conglomerate characters.

(2) A section through the internal ear with the cerebellum *in situ*, demonstrating the three sites at which cerebellar abscess may form, namely, in contact with the lateral sinns, the mastoid cells, and the labyrinth.

(3) Section of the cochlea from a case of bilateral auditory tumour which had destroyed the internal ear. The scala tympani was seen to be full of the growth.

The following series of sections illustrating changes in the ear

leading up to, and consequent upon, meningitis, were next thrown on the screen.

(1) Round-celled infiltration of the utricle from a case of middle-ear suppuration.

(2) Round-celled infiltration of the cochlea.

(3) A section showing infiltration of the membrane of the round window from middle-ear suppuration extending to invade the cochlea. There was no evidence in the specimen of any actual breach of the outer labyrinth wall, but the disintegrating influences at work had furnished the path for the infection of the internal ear.

Some sections showed bilateral and symmetrical changes in the internal ear secondary to meningitis; in others the infection of the labyrinth was limited to the one side. The microscopic examination led to the conclusion that infection from the meninges spread towards and into the internal cavity. One specimen, for example, showed fibrinous exudation in the modiolus.

Anatomical sections were then exhibited, showing the thin scale of bone which separates the sacculle from the internal auditory meatus. Here there is a danger, in curetting the internal ear, of breaking through into the sheath of the auditory nerve. It is probably from this place that cerebro-spinal fluid comes in operating on the labyrinth.

Mr. WHITEHEAD thanked the demonstrator for an interesting exhibition. He expressed himself as particularly interested in those sections which showed the routes whereby the cerebellum became infected, because they afforded support to the rational method of approaching cerebellar abscess through these routes.

Dr. A. BRONNER, with reference to the specimen from the case of scarlet fever, asked what was the state of the mastoid during life. Was there otorrhœa?

Mr. FAGGE referred to the observations of Still and others, that in the middle-ears of infants dying of other diseases exudation of a purulent character was often found. And this fact would render Mr. Scott's suggestion of the relationship between infection of the middle ear and that of the internal ear somewhat unconvincing.

Mr. CHEATLE, like Still, had also remarked upon this condition. It would be inaccurate to call such ears "normal."

Mr. S. SCOTT, in reply to Dr. Bronner, said that there had been otorrhœa during life but no change in the ossicles. It was difficult to answer Mr. Fagge's criticism because the real significance of muco-pus in the tympanum of children dying of other diseases was at present unknown. Consequently he preferred to lay the matter on one side for the present. As to the spread of meningitis in middle-ear infections, he asked whether in Mr. Cheatle's experience the path by way of the internal ear could be excluded.

Mr. CHEATLE replied that though the internal ear in his cases had

not been investigated microscopically, they were normal to macroscopic examination.

DEAFNESS AND DISCOMFORT IN THE RIGHT EAR AS EARLY SYMPTOMS
IN A CASE OF EPITHELIOMA ORIGINATING NEAR THE RIGHT
EUSTACHIAN TUBE.

BY DR. EDWARD LAW.

The patient, a man, aged thirty-seven, was first seen on February 18, 1909. He noticed deafness in the right ear nine months previously, with the feeling of something like a "spirit-level" in the ear on bending the head to the right side. Three months' treatment as an out-patient removed the feeling of something moving in the ear, but the deafness gradually increased, with occasional earache, and when walking he "could feel himself walking up his right side."

Examination.—Right ear, impacted cerumen; general catarrhal condition associated with deflected septum and spurs in both nostrils. Dyspepsia. Usual tests pointed to middle-ear deafness. A catheter could not be passed, and no air appeared to enter right ear on politzerisation. March 8, severe pain in the right ear. Patient not seen again until May 13; in the meantime, the spur in the right nostril had been removed. He now complained of frequently recurring neuralgic pain in the ear and right side of the face; occasional bleeding from the right nostril and peculiar sensations in the right side of tongue and lip. An enlarged gland could be felt on right side of neck; the palate was drawn to the right side; posterior rhinoscopy revealed an indistinct swelling in the neighbourhood of the right Eustachian tube, and on digital examination a soft growth could be felt, which bled when touched. Dr. Tilley examined the patient and confirmed the serious nature of the disease. Potas. iodid. and hydrarg. were prescribed, and admission into hospital advised. The patient was admitted into University College Hospital on June 3, and Mr. Wilfred Trotter has very kindly permitted me to have the following notes: Operation performed by Mr. Wilfred Trotter on June 4. After a preliminary laryngotomy, the usual incision for removal of the upper jaw was made; the malar process, ascending process of the superior maxilla and hard palate divided, and the upper jaw turned outwards, so that a full and very satisfactory view of the naso-pharynx was obtained. The tumour was seen to be growing in the wall of the post-nasal space between the lateral recess and the Eustachian tube, the opening of which was invaded.

The growth, together with a surrounding border of healthy muscular tissue and cartilage of the Eustachian tube, was removed, the upper jaw turned back into position, and secured with a short silver wire passed through the maxillary bones just above the incisor roots. On July 2 the infected cervical glands were removed from the neck.

The patient still suffered from severe neuralgic pains in the ear and right side of the head. The deafness was stationary, but the handle of the hammer had gradually changed its position until it passed almost directly backwards.

Dr. D. R. PATERSON asked what the experience of the Section was with respect to the persistence of pain after these operations. In two cases he had seen the pain persisting after the operation was a prominent feature. It was, he thought, impossible to remove these growths with complete success.

Mr. H. TILLEY had come across four cases of naso-pharyngeal growth in the last seven months, three with enlarged glands in the neck. In the first case there was, in addition to the other symptoms, earache and pain on the same side of the head. In another case there were deafness and a mucous nasal discharge, and a large ulcerated mass was present on the left side of the naso-pharynx. In the third case there was deafness and discharge from the nose, probably proceeding from the growth which lay on the right side of the naso-pharynx. These cases had been operated upon, and there was now no pain; consequently he supposed that the neuralgic pain in the present case was possibly due to the fifth nerve being involved in the scar. His fourth case had also been operated upon with success up to the present. He was inclined to believe that these cases were commoner than was generally supposed. Many cases of malignant cervical glands were probably of naso-pharyngeal origin. Thus, when enlarged cervical glands were found, the naso-pharynx should be carefully examined. The cases manifested certain symptoms and signs in common. There was paresis of the soft palate on the same side as the lesion and numbness of the lips. He had examined the present case ten days ago, and there was no sign of recurrence; consequently he thought that the man's life was safe. He had seen this operation performed in three or four cases now, and had been struck with the large amount of room and the excellent view that was obtained. The practice of first removing the growth and then, some weeks later, the glands, was advisable. He was very hopeful, because the removal of malignant growths from this region was really as successful as their removal anywhere else. In this case, if the neuralgic pain continued, injections of alcohol or resection of the Gasserian ganglion might be tried.

Dr. H. J. DAVIS, referring to a case of extensive epithelioma of the middle ear which he had shown at the Section last year, reported that the patient had since become insane and had died.

Mr. FAGGE, discussing the question from the standpoint of general surgery, said that in all cases of enlarged cervical glands the naso-pharynx, pharynx and larynx should be carefully investigated, both with the mirror and the finger. He had only seen two cases in which a primary focus was not discovered. On the whole, it was more usual to find these obscure growths located in the sinus pyriformis than in the

naso-pharynx. He narrated a case in which the signs of deafness and enlarged cervical glands led to the discovery of an endothelioma in the naso-pharynx. There was no pain present. The case was not operated on and the patient died a few months later of pneumonia. Neuralgic pain after operation might be the result of pressure upon the nerve from callus, and it might, therefore, disappear in time. If necessary it could be overcome by resecting the Gasserian ganglion.

Mr. WHITEHEAD remarked that sarcoma was commoner than epithelioma in this region.

Dr. DAN MCKENZIE recollected having seen two cases of endothelioma of the naso-pharynx in one week at the Central London Throat and Ear Hospital, one of which was under Mr. Stuart Low's care. Both were old men, and came to hospital on account of an ear-discharge of recent date. There were no enlarged cervical glands and no pain, and the diagnosis of naso-pharyngeal growth was made in the course of the routine examination of the case. The lesson was obvious.

A MEMBER asked what glands in the neck were enlarged in this case; one would expect the gland immediately below the ear to be the first to be infected.

Dr. A. BRONNER bore witness to the utility of Hay's pharyngoscope for examining the naso-pharynx.

The PRESIDENT, in reply, said that on March 8 there was nothing found in the naso-pharynx, but two months later the picture of the case had entirely changed. He looked upon the pain as a very serious symptom. The patient's general health had undergone great improvement.

CASE OF ENDOTHELIOMA OF THE TEMPORAL BONE.

BY DR. DUNDAS GRANT.

The patient, a boy, aged six, was first seen in November of last year on account of a swelling over the right mastoid, in which there were three discharging sinuses. There was also a hard gland to be felt below the mastoid process, and extreme narrowing of the external auditory meatus, which was full of pus; the soft parts over the mastoid were boggy and œdematous, but presented a peculiar density on palpation and a fiery redness on inspection, which, combined with a history of long evolution and of several previous operations, led the exhibitor to form a provisional diagnosis of sarcoma. He had been operated on in 1907 on account of a swelling below the ear; he was then retained in hospital for about four months. He had subsequently had three operations of a scraping character, and it was reported that there was no discharge from the ear before the operation, but it had been profuse ever since. There was no history of tuberculosis.

He was admitted a fortnight after he was first seen. A semilunar incision was made behind the sinus-bearing skin, which was excised. An oval, cyst-like, translucent swelling, occupying what

appeared to be a backward extension of the bony external auditory meatus, was disclosed. When this was removed the meatus was found large enough to receive the tip of the thumb, and the floor was almost non-existent. The enlarged gland was dissected out, the antrum opened, and the greater part of the mastoid removed, the lateral sinus being exposed for about half an inch with pus in the groove; the wall of the lateral sinus was extremely white. An excision was made in the membranous meatus, and a drainage-tube was inserted in the mastoid opening. The microscopical examination showed the tumour to consist of typical endotheliomatous tissue. The wound, as might have been expected, did not heal cleanly, there being some inversion of the anterior lip of the mastoid incision, while flabby granulations formed freely on the posterior one. A discharging sinus remained at the lower part, in which, no doubt, sloughing was taking place; under the action of boracic fomentations this cleared up to some extent. On January 14 the wound was reopened for the purpose of bringing the lips of the upper part into better position. The granulations were scraped away and a large tongue-shaped flap from the posterior wall of the meatus formed. The incision was closed with catgut stitches after a certain amount of undermining of the edges of the wound so as to make them freer. Union has taken place to some extent, but not completely.

Dr. P. McBRIDE asked if the naso-pharynx had been examined. He narrated a case which had recently been under his care, but could not be completely described because the patient had surreptitiously gone away. In this case a polypoid growth of endotheliomatous tissue was found, and the naso-pharynx was also invaded. He believed that the patient had come to London and had had the radical mastoid operation performed.

Mr. CHEATLE reminded the Section of a case of endothelioma of the ear—the first recorded—which he had reported. The concha and meatus were removed. A few years later a small recurrence took place and was removed. There had been no further recurrence since.

Dr. D. R. PATERSON asked how long the discharge had lasted in Dr. Grant's case. He himself hoped to show a similar case shortly in which there had been discharge from the ear since infancy. KümmeI, of Heidelberg, had observed that in nearly all these cases there was a previous history of purulent discharge.

Mr. FAGGE requested that the growth might be submitted to the Morbid Growths Committee.

Dr. DUNDAS GRANT replied that the growth seemed to have commenced in the posterior wall of the meatus, and that there was a long history of suppuration. Dr. Wyatt Wingrave's report as to the microscopical structure was as follows: "Two portions were examined, one from the meatus, which had the appearance of a polypus, measuring 3 by 15 cm.; another, smaller, from the mastoid. Both portions were similar in structure, and presented the typical character of an endothelioma in all

stages of growth, from small, compact clusters of endothelial cells surrounded by dense fibrous stroma, to large areas of the same cells enclosed by attenuated alveoli. The stroma consisted of white fibres and fusiform fibroblasts, without any lymphatic infiltration, the meatal mass being covered with stratified epithelium. The nuclei showed examples of both heteromitosis and direct division."

SOME FEATURES OF THE AUDITORY APPARATUS OF A 16 MM. HUMAN EMBRYO, AS SHOWN IN A RECONSTRUCTION MODEL (BY THE WAX-PLATE METHOD OF BORN).

BY MR. J. J. JENKINS.

"*External Ear.*—The embryonic tubercles of the pinna have fused, but are still indicated. The external auditory meatus is expanded internally. In the model the plug of epithelial cells has been removed to show the form of the meatus.

"*The Labyrinth.*—The vestibule is compressed laterally and is somewhat quadrilateral in form. The semi-circular canals are in an advanced stage of development compared with the cochlea, which is represented by a simple tube turning on itself at its tip. The cochlear element of the labyrinth lies close to the roof of the pharynx, considerably internal to the orifice of the primitive Eustachian tube, and comparatively close to the sagittal plane. The ductus endo-lymphaticus is large and long.

"*The Region of the Middle-ear Tract.*—The Eustachian tube, tympanic cavity, and antrum are represented by the first pharyngeal pouch in its more or less primitive condition. Superiorly, the pouch is forming an acute fissure, and at its outer extremity is turning upwards to invade the mesoblast between the labyrinth and the external auditory meatus. Incus, malleus, and Meckel's cartilage are represented as one continuous mass. Microscopically Meckel's bar is cartilaginous in the lower part, but malleus and incus are still in the mesoblastic state and differentiated only by concentration of cells. The process from the bar in backward direction is the great process of the malleus. The incus has a thin process backwards and inwards, to fuse with the mesoblastic anlage of the stapes. The articulations have not yet been differentiated. The hyoid bar—in a prechondral stage—is seen passing upwards on the inner side of the facial nerve. The upper extremity of the hyoid bar bifurcates, the anterior portion being directly continuous with the stapes. The facial nerve lies in the fork so formed. There is a large vein lying to the outer side of the horizontal portion of the seventh cranial nerve, to the inner side of the

malleus and incus, and below the external semi-circular canal. It is connected posteriorly with the internal jugular vein, and anteriorly with a venous plexus internal to the Gasserian ganglion. There is another large sinuous channel, in the position somewhat of the petro-squamosal sinus, lying above the semi-circular canals."

SECTIONS (10 μ) OF THE MASTOID PROCESS, SHOWING THE PAVEMENT
EPITHELIUM LINING THE AIR-CELLS.

BY MR. J. J. JENKINS.

"Sections (10 μ) of a chip removed at a complete post-aural operation from the mastoid below and to the outside side of the antrum, showing columnar cells of the lining membrane of the cells of the suture between squamo-zygomatic and petro-mastoid elements of the mastoid process."

The PRESIDENT having expressed his interest in the model,

Mr. S. SCOTT said that such a method of portraying specimens was a step in the right direction. He hoped that it would become possible to reproduce pathological conditions also by the same process.

PULSATING ANGEIOMA (ANGEIOMA RACEMOSA, CIRROID ANEURYSM) OF
THE RIGHT AURICLE.

BY MR. GEORGE WILKINSON.

(With photographs, paraffin cast, and microscopical section.)

From a woman, aged thirty-eight. Her right ear had always been larger than the left, and had increased rapidly in size during the last two years. She had had severe hæmorrhage from the ear a few days before coming to the Sheffield Royal Hospital on April 27. The ear measured $3\frac{3}{4}$ in. from above downwards, $2\frac{3}{4}$ in. from side to side, and projected $1\frac{1}{2}$ in. from the side of the face. It was of a mottled red and purple colour, with many dilated vessels in the skin, and throbbed with a noticeable expansile pulsation with each heart-beat. Many large arteries could be felt entering the mass and coursing in tortuous curves under the skin.

Operation, May 3: Preliminary ligature of the external carotid. An incision carried all round the ear and all the vessels entering from the outside ligatured and divided. The skin dissected up from the back of the auricle and the main mass of the angioma dissected out. Very little bleeding. A plastic operation was done on September 7 to reduce the size of the auricle. The skin was

incised along the margin of the auricle and dissected up from the cartilage, which was trimmed away. Much of the connective tissue of the lobule was dissected out. The skin-flaps were trimmed and folded over in the upper part of the ear to form a new helix and sutured.

A similar case was reported by Stewart in the *Annals of Surgery* for 1903. In former cases the hæmorrhage at the operation had been very free; for this reason the carotid artery was tied first in this case and then the other vessels.

The PRESIDENT congratulated Mr. Wilkinson upon the success which had attended the operation.

OBJECTIVE CLICKING SOUND IN LEFT EAR.

By MR. HERBERT TILLEY.

Mrs. G——, aged thirty, sought hospital advice for a “clicking noise in her left ear which her doctor could also hear.” She had noticed it for twenty months, and it followed an attack of influenza.

Examination (December 9, 1908): The clicking sound was regular, 120 per minute, and could be heard two to three feet from the patient's left ear. It was less easily heard when the examiner's ear was placed near to the open mouth of the patient. A rhythmic contraction of the muscles forming the floor of the mouth and of the soft palate was also noticed, and these were synchronous with the clicking sound. The noise and the muscular contractions ceased when the patient held her breath. Hearing normal. No evidence of organic disease of the central nervous system. At times the clicking noise ceased altogether, but the muscular contractions continued.

The PRESIDENT had never seen a similar case. It had proved of great interest to the members.

Dr. D. R. PATERSON described a similar case in a married woman who had suffered from a twitching sound in the left ear. Hearing was perfect. The click was objective as well as subjective. On looking into the left ear definite twitching up of the lower and posterior portion of the membrana tympani could be plainly seen. The noise always ceased when the mouth was opened, and so a possible rhythmic twitching of the soft palate could not be made out. He had endeavoured to see the movements by the use of the salpingoscope, but unsuccessfully. The noise was not coincident with the pulse, and was not as rapid as in the present case.

Dr. DUNDAS GRANT considered the case an unusually extreme one of a clonic spasm of the tensor palati (acting on the Eustachian tube) and its continuation in the tensor tympani, and attributed it rather to the

general neurasthenic condition of the patient than to any local cause. The condition, in his experience, was an extremely obstinate one.

Dr. P. McBRIDE said that this case was unique in some respects. Clicking tinnitus was by no means uncommon in neurasthenic people, but what he had never seen before was the twitching of the floor of the mouth. It would seem that the noise was caused by a drawing apart of the lips of the mouth of the Eustachian tube. He himself was able to produce this sound at will, but no one had been able to detect any movement of the membrane when he did so. It was, indeed, difficult to make certain of any movement of the membrane unless the manometer was used.

Mr. H. TILLEY, in reply, raised the question of the prognosis in cases of clicking tinnitus. It had been said that such cases invariably ended in lunatic asylums, and Dr. Henry Head gave a grave prognosis in the present case. Five years ago he had shown a case before the Laryngological Society of post-pharyngeal twitch, and that patient ultimately died of general paralysis of the insane.

CASE OF TABETIC DEAFNESS.

BY DR. DAN MCKENZIE.

The patient, a male, aged forty-two, came to hospital a few weeks ago on account of deafness. It was observed that he was suffering from hoarseness, which on examination proved to be due to complete paralysis of the left vocal cord. The left side of the soft palate was also paretic, and it was possible to see a pulling-over of the left half of the posterior pharyngeal wall when he was asked to phonate. Within the last few days he had begun to experience some difficulty in swallowing.

The condition of the ears was a little complicated. Four years ago a radical mastoid operation was performed upon the right ear, and there was now a large cavity, on the walls of which some granulations were still present, but both the hearing and the vestibular sense were more active in this ear than in the left, which had never been affected with purulent disease.

The hearing-tests were as follows:

	Right	Left.
Watch	= contact	∞
Whisper	= ∞	∞
Convers.	= 4 in.	∞
T.F. (256)—		
Meatus	= - 30"	- 50"
Mastoid	= - 10"	- 20"
Rinne	= —	—

Weber, lateralised to the *right*.

Galton's whistle not heard in either ear.

Vestibular Reactions.—There was no spontaneous nystagmus, or, at the most, only a very minute twitch, on extreme deviation.

Caloric (cold, 22° – 24° C.).

Right.

Left.

Nystagmus marked in $20''$.

Very slight nystagmus in $50''$.

Vertigo.

No vertigo.

That is to say, the vestibular reaction on the right (the operated) side was fully equal to normal; while on the left it was decidedly subnormal.

The pupils were unequal, the left was a little dilated and fixed, and the right, smaller than the left, showed a sluggish response to light. Knee-jerks normal; ankle-jerks absent. No ataxy.

Dr. Purves Stewart, who had examined the patient, was of opinion that the case was probably one of tabes, with involvement of the cranial nerves. The particular interest of the case to the otologist lay in the asymmetrical character of the deafness and impairment of the vestibular system. The patient was under treatment by pot. iodid.

The PRESIDENT asked if Dr. McKenzie could give any information with regard to the frequency of deafness in tabes.

Mr. WILKINSON asked if Dr. McKenzie's method of estimating the strength of the caloric reaction by a measurement of the induction-period was reliable in cases in which the mastoid operation had been performed. He had recently tried it in such a case, and had found that the induction-period was less than normal. Would it not be better in these cases to depend upon the duration-period of the nystagmus?

Dr. DAN MCKENZIE, in reply to the President, said he was not aware of any investigations upon the frequency of deafness in tabes. With reference to the caloric test after the mastoid operation, it was recognised that the reaction was evoked sooner when the labyrinth was exposed, and allowance should be made for this circumstance. If, as in Mr. Wilkinson's case, the reaction was well marked and the induction-period was shorter than usual, it might be concluded that there was no impairment of the vestibular sense. He believed that an estimation of the duration of nystagmus after the caloric test was quite unreliable.

A NEW INSTRUMENT TO AID HEARING.

By DR. McNAUGHTON JONES.

The instrument consisted in two thin, concave, discoid plates, which were applied to the head so as to project out beyond the auricles in order to catch the sound-waves. It had been suggested by the natural putting up of the hand behind the ear, so often practised by deaf people.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Thirty-first Annual Congress, held at the Harvard Medical School, Boston, Mass.,
May 31, June 1 and 2, 1909.*

(By courtesy of the *Medical Record*.)

(Continued from p. 100.)

ÆTIOLOGY AND TREATMENT OF DENTIGEROUS CYSTS.

By DR. D. CROSBY GREENE, JUN. (Boston).

It had been shown that it was possible to make an artificial epithelial cyst by transplanting a bit of skin epithelium with its supporting cutis into the deeper tissues, as into the abdominal cavity. The epithelium, growing in its new location, spread over the space into which it had been placed, for which it made a lining with a small cavity within. Such an artificial cyst would continue to grow indefinitely. On the currently accepted theory of pathologists in regard to the growth of tumours, the formation of an artificial epithelial tumour within the jaw-bone could be accounted for rationally. The teeth were essentially epithelial structures, developed by invagination of the jaw epithelium into the body of the jaw. Other elements entered into the final tooth structure, but the origin of the tooth was this ingrowth of the jaw epithelium. Now, doubtless a bit of this in-growing epithelium was pinched off as an island of isolated epithelial tissue, and such an island pinched off from a tooth root grew in an atypical way, with the resulting formation of a cyst. In order to cure thoroughly such growths every bit of the epithelial lining must be removed, otherwise they might recur. The cavity must be opened widely, enucleated thoroughly, and drained completely. This opening might be made into the antrum instead of into the mouth, thus avoiding infection from the latter. The closure of the cavity was often extremely slow, in spite of every attention to surgical technique. The antrum method was especially applicable to large cysts. One case history was given illustrated by an X-ray plate.

Dr. W. E. CASSELBERRY asked if there was any method of distinguishing between dentigerous cysts and hydrops antri. He had reported cases under the latter title, but had always felt some doubt as to the correctness of his diagnosis.

Dr. N. H. PIERCE (Chicago) said that there were two kinds of dental

cysts, one due to the inflammation and the other due to errors in development. Cysts arising from inflammation of the peridental mucosa were often removed by the dentist, as the cyst was perched on the end of the root. This might come to occupy the entire antrum and cause what Dr. Casselberry had called hydrops. But it could not cause bulging of the antral wall. This came only from a true dentigerous cyst. The fluid in the latter contained cholesterol crystals.

Dr. J. H. BRYAN (Washington) believed in the existence of hydrops antri, and also that it might arise from true dentigerous cysts. There was also such a thing as the hydrops of the frontal sinus.

Dr. D. BRYSON DELAVAN (New York) thought it would be interesting to know what relation, if any, these cysts bore to the expansion found in the ethmoid cells and middle turbinate body.

Dr. GREENE said, in closing the discussion, that it would be possible to distinguish between cyst and hydrops by washing out the cyst by puncture made from the cyst to the mouth under pressure. In cyst one got no fluid from the nose through the bulging in the mouth. If necessary a puncture could be made into the antrum intra-nasally, and then if the puncture did not result in fluid coming from the nose one could see the cavity was not the antrum. Transillumination on the side of a dentigerous cyst always gave a brilliant illumination.

SYMPOSIUM ON THE SURGERY OF THE OESOPHAGUS.

Opened by Dr. S. J. MIXTER (Boston), who considered the subject from the standpoint of the general surgeon. He did not believe that modern instrumentation did away entirely with the general surgeon in reference to oesophageal lesions. He detailed his personal experience with oesophageal strictures, and spoke of the various means of relieving them. In the detection and removal of foreign bodies modern methods with the oesophagoscope had scored many brilliant successes, but in the treatment of strictures the older surgical methods still had many advantages.

Dr. CHEVALIER JACKSON (Pittsburg) continued the symposium from the standpoint of the laryngologist, discussing the question from the laryngological point of view. He said that in all cases a body which had entered the air-passages could be brought out by the same route, and that surgical operations to effect this result were no longer necessary. Rest of the oesophagus to reduce the ever-present inflammation was absolutely necessary, and only fluids should be allowed. In case of new growths, etc., the patient should have an early gastrostomy, and always before a resection of the oesophagus the stomach must be emptied of food (it never could be of secretions) and the bowels emptied by enemata. Care must be taken before operation to exclude aneurysm. The blind passage of a sound in a gullet not examined by previous direct vision was a dangerous procedure. The history of stricture

from accident did not exclude malignancy. In the author's experience stricture was amenable to treatment by *bouginate per tubum*, dilatation with œsophagoscopically placed laminaria tents, œsophagoscopical string-cutting dilatation, and Abbe's retrograde string-cutting method. These methods were illustrated by the author, who also exhibited various instruments. He also referred to the operations of cervical œsophagotomy, lateral cervical œsophagotomy, and subhyoid pharyngotomy, gave the indications for each, and gave his experience in five cases, two of inoperable malignancy and three of stricture, in which he had inserted a tube into the stenosed lumen, which enabled the patient to swallow liquids and raw and soft-boiled eggs. He also described the operation of autoplasmic repair of the œsophagus. He concluded by saying that in no case of dysphagia should œsophageal procedure precede œsophagoscopy, and it should be used to exclude neoplasms, spasms, compressive and inflammatory stenosis, as well as ulcerations and varicosities. Resection of the upper portion of the œsophagus, if it interfered with glottic closure, was so sure to be followed by septic pneumonia that it was wiser to close off the larynx or to extirpate it, bring the trachea forward and stitch it to the skin. In all these operations the strictest watch over the entire operating-room organisation is necessary. Nurses and internes were apt to be led into carelessness by the fact that the field of operation could not be sterilised. They forgot that while the patient was more or less immune to the organisms he himself harboured he was not immune to organisms even of identical kinds introduced from other sources.

Dr. HARRIS P. MOSHER (Boston) gave the histories of two cases of stricture of the œsophagus with dilatation, and one of diverticulum, all resulting successfully. He said that the lumen of the gullet was very much larger than we were accustomed to think, both in the infant and adult. At one year of age it would pass a flat pearl button one inch in diameter. Between two and three years it would admit to its upper part the end of a Jackson spatula. The older text-books stated that three-quarters of an inch was the safe limit for dilatation in stricture cases, but this measurement was manifestly too small. A negative examination with a small tube under cocaine was useless and amounted to nothing. Ether was advisable. Strictures were best diagnosed and treated by means of the œsophagoscope, and instruments used through it. Opening of the stomach for non-malignant strictures ought to become a rare procedure. To open the gullet from the side of the neck for the removal of smooth foreign bodies was already obsolete surgery. The ballooning of the œsophagus for locating the lumen of tight strictures bids fair to be a great help to us. The direct method of carrying a capsule filled with thread through the stricture into the stomach was much better than feeding the thread to the patient. Not all strictures could be dilated;

some would have to be cut. The instruments for this were similar in principle to those used in cutting urethral strictures. For perhaps two inches in the upper part of the gullet it was safe to cut backward and risk perforating the posterior wall.

Dr. EMIL MAYER (New York) referred to a child with congenital stricture of the œsophagus whom he had seen, and whose history had been reported twenty years ago. The passage of a large bougie, under anæsthesia, enabled her to swallow. Since that time she had grown up in a perfectly normal way. In a recent case of a man a bougie was arrested nine inches from the teeth, and could not be passed further. A diverticulum was thought of, and a piece of rubber-tubing was passed, and then an X-ray picture taken showing a pouch. Dr. Mayer thought it was risky to fill such pouches with bismuth, as it might be difficult to get it out.

Dr. J. O. ROE (Rochester) referred to two cases of internal œsophagotomy he had reported. In one patient, a boy, aged eight, with stricture, he had first passed a small bougie and then the œsophageal knife. Five years later the boy was perfectly well. The second patient was a woman, aged thirty, with stricture following the lodgment of a chicken-bone in the throat. Dr. Roe said that he had now under observation a woman, aged sixty-five, with a pouch of the gullet, and that by passing a hollow bougie occasionally he was able to keep his patient in good condition. He did not think it quite safe to do any cutting operation in this case.

Dr. G. L. RICHARDS (Fall River) referred to the case of a colleague who had inserted the familiar "coin-catcher," found it impossible to remove it, and had to do a tracheotomy. He supposed the instrument had been caught by the cartilage, which was not pressed downward and forward as Dr. Mosher had suggested.

Dr. D. BRYSON DELAVAN (New York) thought that the advance of surgery was to-day being seriously threatened by the too general operating in cases requiring special skill by men not specially qualified for it. Such work as that described to-day should be given to those men who make a special study of it, rather than to general surgeons indiscriminately.

Dr. JACKSON said that he regarded the old-fashioned "coin-catcher" as a dangerous instrument, as it might get caught, tear out the inside of the larynx, and bring the patient into great danger.

SOME OBSERVATIONS UPON THE COMPLETE EXTIRPATION OF THE DISEASED FAUCIAL TONSIL.

By DR. J. S. GIBB (Philadelphia).

Particular reference was made to the method followed with the boys who entered Girard College in his city. General anæsthesia was used except with older boys with non-adherent tonsils. The tonsil was pulled from its bed and its attachments to the pillars broken by the Allis blunt dissector. When the attachment was very firm scissors or tonsil knives were used. The finger was introduced, and an endeavour made to break up the deeper adhesions and leave the tonsil hanging to be removed with the wire snare. Fragments of tissue remaining could be removed

with the punch forceps. If it was necessary to remove a tonsil at all it should be done completely. The wire snare was far more efficient than the tonsillotome in bringing about the desired condition, viz. removal of all diseased crypts. In this method of finger enucleation too strenuous use of the finger should be avoided in breaking up the adhesions. It was far better to snip with a curved scissors. At times the reaction was greater than with the tonsillotome, in spite of all care. Of one hundred cases thus treated the average time in the infirmary was four days. In ninety there was a fever between 99° and 101.5° F. In nine cases in which the friable nature of the tonsillar tissue was very pronounced, and in which there was much dissection and the use of punch forceps called for, the fever rose to 102° F. and over. In two there was regurgitation of fluids through the nose. The fauces were indurated, and there was sloughing over the area of the tonsillar wound. It was rare to have any severe bleeding in this method.

Dr. E. L. SHURLY (Detroit) commended the views of Dr. Gibb, but said that, while we were all familiar with the immediate results of tonsilotomy, we did not know so much about the remote results. We must remember that the tonsil had an internal secretion, and we did not know the possible results on the pharynx, stomach, and contiguous or neighbouring organs following the removal of all the tonsillar tissue. He said that disagreeable atrophy might ensue. We should indeed remove all diseased crypts, but have we not done enough by so doing? Should we not leave enough tissue to perform the functions of the tonsils?

Dr. W. E. CASSELBERRY (Chicago) did not agree with Dr. Shurly. We should always remove the tonsillar tissue completely. He used sharp cutting instruments in the operation. We should be sure to remove the tissue included within the velum, which he had named the "velar" lobe. He described his method of operating. He used a tonsillotome, which was a modified Mathien instrument with the fork cut off, and had a snare-like action.

Dr. O. T. FREER (Chicago) used sharp instruments in freeing the tonsil from its adhesions. He separated the velar lobe last, making traction on the tonsil by means of a sickle-shaped knife. In this way the organ was turned wrong side out and cut away with a curved knife.

The method of finger dissection was commended by several members.

Dr. J. F. BARNHILL (Indianapolis) said that whatever function the tonsil might have, there was plenty of other tissue in the throat which would take care of that function, especially since the tonsil was diseased. The tonsil pits often filled up after removal with granulation-tissue, but sometimes adhesions formed between the anterior and posterior pillars, and these might pile up on the tongue and bind it down. After-pain was less with sharp cutting instruments. He made firm pressure with a pad soaked in hydrogen peroxide immediately after removal, and then when the pad was thoroughly dry he covered the area with Monsel's solution, but he did not believe in using this solution until the area was fully dry.

Dr. C. G. COAKLEY (New York) said that there had been in his cases

anywhere from two to four weeks after operation a small mass of granulation tissue, which he removed by either the punch or nitrate of silver. There was often left an irregularity of the lower edge of the velum on the two sides, and he wondered what effect, if any, followed in professional voice-users.

Dr. G. HUDSON MAKUEN (Philadelphia) thought that one great element of value in Dr. Gibb's paper was that he had been able to watch his cases so closely and report on their condition some time after operation. He would as soon think of leaving a decayed tooth-root in the mouth as to leave a portion of a tonsil.

Dr. R. C. MYLES called attention to the basi-lateral tonsils he had described some fifteen years before. He had seen them extending at least three-quarters of an inch into the palate, and when the entire capsule had been removed there had been a cellulitis extending into the zygomatic fossa. Sections of the superior constrictor muscles were too often removed along with the tonsils.

Dr. J. PRICE-BROWN (Toronto) had been told by a music teacher of his city that several pupils had had their singing voices practically destroyed by the removal of the tonsils.

Dr. W. K. SIMPSON (New York) thought that we were too apt to base our opinion on the immediate sequel following removal of the tonsils, and that we might get from the filling up of the tonsillar fossa with cicatricial and connective tissue an interference with the muscular action of the velum which would be just as harmful as the leaving behind of a small portion of the tonsil.

Dr. J. O. ROE said that patients sometimes complained more of septic trouble around the neck and of glandular swellings after the tonsil operation than before it. When a tonsil was diseased it was diseased all the way through, for the crypts go all the way to the bottom of the tonsil, and if one left a portion behind one had increased absorption of the septic material in the region.

Dr. EMIL MAYER (New York) deprecated the use of the finger. Modern surgery called for the use of rubber gloves. He used a blunt dissector, with an edge filed so that it could be used as a knife. He thought that too much emphasis had been laid on the amount of blood in these regions.

(To be continued.)

CORRECTION.

On line 3 of page 79 of the February number of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, the words "optic tracts" should read "carotid tracts."

As this error in Dr. Syme's interesting paper is of considerable importance, we trust our readers will make the correction in their copies.

AUSTRIAN OTOLOGICAL SOCIETY.

*October 25, 1909; Monats. f. Ohren., year 43, No. 11.*PROFESSOR V. URBANTSCHITSCH *in the Chair.**Abstract of the Proceedings.*TESTS RELATING TO APPARENT OBSTRUCTION TO SOUND-CONDUCTION
IN ONE-SIDED LESIONS OF THE INNER EAR.

BY R. BÁRÁNY.

If one couples up both one's own ears with those of a person in whom the hearing is normal and then applies a tuning-fork to the mastoid process on one side of the person under examination, it will be found that the sound is conveyed to either ear of the observer—usually in equal measure. There are, however, instances in which the note is heard better from the side on which the fork is applied, and others in which it appears louder from the contra-lateral side. Care must be taken that the end-pieces are inserted with equal firmness. This experiment shows that the note is conducted from the mastoid process of one side in equal measure to both ears, and also that the vibrations from the bone affect the cartilage on each side alike. In the case of people with normal hearing the observations of the examiner and the report of the person under investigation coincide, but if one examines a patient with one-sided deafness the result is different. If, now, an otoscope is inserted into the deaf ear and a fork applied to the mastoid process on this side, the patient will not hear the sound so long as the observer—that is, there is a shortening of the bone-conduction. Now, as we have seen in the above experiment, the note of a fork applied to one mastoid process is heard equally well by the ear on the opposite side. What, then, is the explanation in this instance that the patient, in spite of this fact, does not hear the note so long as the observer? As Bárány's investigations have already shown, the observer hears the note of a fork applied to the mastoid of a normal person just as long as the person under observation. The fact that the meatus is occluded with the otoscope produces a condition of maximal bone-conduction on the side in question, and will account for the apparent lack of appreciation by the patient's healthy ear.

Now if one takes a case of complete one-sided deafness and carries

out this test the note will be heard by the observer equally from both sides, but the patient of course will only hear it with the sound ear, and he does not hear it so long as the observer, since this ear is not occluded; if, however, the patient occludes the sound ear, then he will hear the note just as long as the observer. Thus it follows that if the meatus on the sound side be occluded, shortening of bone-conduction in cases of one-sided deafness cannot be recognised.

Middle-ear disease will produce the same reaction in this test as a healthy ear the meatus of which is occluded. In these cases a lesion of the inner ear limited to one side will be completely overlooked in testing the bone-conduction by the ordinary method. Now, as in cases of one-sided deafness the air-conduction is *nil* and the faculty of bone-conduction to the opposite ear affords an apparent sense of hearing, these cases will simulate a condition of impairment to sound-conduction. To a still greater extent than in cases of complete one-sided deafness do instances of marked depreciation of hearing limited to one side lead to errors in diagnosis. In these cases the shortening of bone-conduction cannot be determined by means of the otoscope, since the sound will be heard by the healthy open ear. Here, again, in addition to the internal ear disease an impairment of sound-conduction will be simulated. This error may be avoided by testing the hearing with the high and low tuning-forks, and also by noting if the sound of a fork applied to the diseased side is raised in intensity or diminished when the meatus is occluded. If the inner ear alone is involved the tone will be found to be raised under these circumstances, whilst if the middle ear be also affected no alteration will be detected. Further, the following test will help to decide whether we are only dealing with a purely apparent impairment to sound-conduction, the real cause of the disability being a lesion of the inner ear: The shortening of the bone-conduction is first determined on the diseased side by means of an otoscope. It amounts, say, to twelve seconds. Then the fork is again applied to the same spot on the mastoid process, but the ear is not connected by an otoscope; directly the sound is lost the meatus on the healthy side is occluded, and the time noted when once more the note can no longer be heard. Should this period amount, in this particular instance, to more than twelve seconds, then we are dealing with a combination of middle and internal ear disease, if the result of testing the bone and cartilage-conduction also corresponds with this reaction. Should it only amount to twelve seconds, then it is most probable that the case is one of a pure internal ear lesion on the diseased

side. From a practical point of view the following observations may also be added: (1) If we have a case of total one-sided deafness to air-conduction under consideration we are unable to draw any conclusion as to the presence of an impairment of sound-conduction from the appreciation of the note of a tuning-fork applied to the bone.

(2) If we are investigating a case in which the reaction to the tests for bone- and cartilage-conduction indicate an impairment of sound-conduction and shortening of bone-conduction on one side, then an impairment of sound-conduction may indeed be present, or only be simulated owing to the perception of the note by the healthy ear. The differential diagnosis must then be further determined by means of the various methods above described.

[This report of the description of Bárány's observations is rather obscure. It should be read in conjunction with the abstract of his other communications, which appeared in this JOURNAL for November, 1909, p. 608, *et. seq.*

The following example is offered as a correct interpretation of his conclusions, and may help to illustrate the clinical significance of his deductions more clearly:

Hypothesis—Left-sided deafness; shortened bone-conduction by 12 seconds; lesion of the internal ear.

The bone-conduction of the patient is first determined by means of Bárány's method with an otoscope. The otoscope is then laid aside and the following data ascertained from the patient's report:

(a) If, when the right meatus is occluded, the note from the tuning-fork applied to the left mastoid (which previous to such occlusion could no longer be heard) then reappears for more than 12 seconds, then the bone-conduction of the patient is greater than that of the observer, and to account for this lengthened bone-conduction there must be an element of middle-ear disease accompanying the lesion of the internal ear on the left side.

(b) If, when the right meatus is occluded, the note is *not* heard for more than 12 seconds, then the bone-conduction of the patient is not greater than that of the observer, and there is no indication of any middle-ear element in the deafness on the left side, which is most probably entirely due to a lesion of the inner ear.—A. R. T.]

A METHOD FOR DETERMINING THE INDICATION FOR OPERATIONS ON THE NOSE IN PATIENTS WITH "NASAL" SPEECH.

By EMIL FRÖSCHELS.

One may divide nasal speech into three main types: The open

(rhinolalia aperta), the closed (rhinolalia clausa), and the mixed (rhinolalia mixta). During normal speaking the mouth is shut off from the nose by means of the soft palate, except in the pronunciation of *m*, *i*, *u*, *ng*,¹ which sounds are formed in the nose, as is easily recognised by the sense of vibration in the *alae nasi* when they are uttered. If the soft palate hangs lax then the air passes into the nose during the pronunciation of other sounds as well, and the open type of nasal speech results. If by reason of adenoids or some other cause the nasal passages are either partially or wholly occluded, then no air can pass into the nose during the utterance of those sounds, which are normally formed in the nose, and the closed type of nasal speech occurs, as, indeed, obtains in the course of the "common cold." In the production of rhinolalia clausa a total occlusion is not necessary; it is sufficient if only a partial obstruction is present. Rhinolalia mixta takes place when the air passes into the nose pathologically owing to some weakness of the soft palate, whilst at the same time there is some contraction of the nasal passages as well. There is yet another cause for the closed type of nasal speech, which is due to a continuous spasm of the soft palate and occlusion of the nose during the formation of all sounds. A diagnosis of this latter condition could formerly only be made by a process of exclusion, that is, if the disability was found to persist after any obstruction in the post-nasal space had been removed without effect, or if examination revealed no growth in this situation. Fröschels suggests the term "rhinolalia palatina" as a convenient name for this type of nasal speech, and offers the following experiment as a ready means of establishing the diagnosis of this condition: Supposing one has to deal with a case of rhinolalia clausa and wishes to be certain that there is no element in it due to a spasm of the soft palate, a curved sound or Eustachian catheter is passed through the nostril, and the soft palate held forwards whilst the patient utters some sound which should normally be produced in the nose, such as "money" or "king." If the pronunciation of these words is now clear it is reasonable to suppose that some spasm of the soft palate is a factor at any rate in the production of the nasal speech, whilst if no alteration in the voice-resonance is effected by this means, then one may assume that the case is one in which the occlusion of the nose is dependent on some form of physical obstruction, *e. g.* adenoids, deflected septum, or enlarged turbinals. Spasm of the soft palate should be

¹ *L. e.* as in German.

treated by appropriate voice exercise, and other defects by suitable operative interference.

FREY asked if Fröschels did not think that this spasm might be dependent on extreme deafness and consequent affection of the innervation of the palate.

FRÖSCHELS replied that this was possible, but that deafness was usually associated with the open type of nasal speech.

ALEX. R. TWEEDIE (*trans.*).

Abstracts.

PHARYNX AND NASO-PHARYNX.

Smith, L.—*A Little-Recognised Consequence of Adenoid Growths.* "The Practitioner," January, 1910.

The author draws attention to the liberal secretion of thick and acrid mucus in adenoid cases, and insists upon its importance in causing gastric derangement and troublesome cough, which results may occur separately or together. Removal of the adenoids is advised, but the author points out that further treatment is usually necessary to finally overcome the troubles of which they have been the cause. *Macleod Yearsley.*

Griffiths, J. Howell (London), and Riddell, D. F. (London).—*Two Cases of Rupture of the Vessels of the Neck into the Pharynx in Scarlet Fever.* "Glasgow Medical Journal," January, 1910.

CASE 1.—A boy, aged nine and a half, was suffering from a mild attack of scarlet fever, which ran a normal course for twenty-three days. On the twenty-fourth day the patient complained of pain on the right side of the neck, with considerable swelling and a rise of temperature. Each day these symptoms increased, and on the fourth day the right tonsil was seen to be pushed forward by a large swelling behind it, and the right side of the palate was also inflamed. An incision was made in the protruding tissue, but no pus was found. Next day there was still no pus present, but on digital examination the swelling was found to be quite soft, and the tip of the finger entered a cavity behind the tonsil. On the withdrawal of the finger profuse venous hemorrhage took place, which, proving uncontrollable, death ensued instantaneously.

Post mortem.—No ulceration of the fauces or tonsil was detected, but behind the right tonsil was an irregular-shaped cavity, the inner wall of which was broken down, the outer wall being connected with the internal jugular vein. There was considerable enlargement of the glands of the neck.

CASE 2.—A boy, aged three and a half, suffering from a mild form of scarlet fever. On the seventeenth day from the date of the eruption the temperature suddenly rose. An enlargement of the glands took place externally, and a slight deposit on both tonsils became evident. Five days later the child was practically well, except for the glandular enlargement, which still persisted, although the temperature was normal and only slight ulceration was visible. While sitting up in bed taking some

rice-pudding the child gave a sudden cough, which was followed by profuse arterial hæmorrhage, and death ensued immediately.

Post mortem.—A breaking down of the glands was found on the right side of the neck. At the level of the angle of the jaw, just behind the pharyngeal wall, a small cavity was disclosed filled with blood-clot. The walls of this cavity were ulcerated, and at the upper part the internal carotid artery was involved in the ulceration.

Notes.—These cases are of interest, as very few of the kind have been reported. In the first case, there being no throat trouble present, it is probable that a deep lymph-gland broke down, involving the coats of the internal jugular vein, from which vessel blood oozed into the surrounding tissue, giving rise to the swelling behind the right tonsil. In the second case a septic ulceration of the tonsils took place, affecting, secondarily, the glands, the breaking down of which involved the coats of the internal carotid artery, causing that vessel to give way suddenly. In neither of these cases were there any symptoms indicating implication of the vessels.

Andrew Wylie.

Hurd, L. M. (New York).—*Pemphigus of the Throat; Report of a Case.* "The Laryngoscope," September, 1909, No. 9, p. 689.

A woman, aged 33. Five years before she first consulted the author, sore throat, dysphagia, and anorexia, were experienced at irregular intervals. Four years later a similar condition began to affect the conjunctiva of the left eye.

On examination, bullæ, vesicles, and superficial ulcers were seen on the velum, posterior pharyngeal wall, and base of the tongue. There never had been any eruption on the skin.

A subsequent report from the patient conveyed the information that she had lost the sight in the left eye.

Pemphigus entirely limited to mucous membranes is rare.

Dun McKenzie.

NOSE.

Baumgarten, E. (Budapest).—*The Early Forms of Ozena.* "Archiv für Laryngol.," vol. xxii, Part III.

The author has observed three cases in which babies during the first year of life have been the subjects of crust-formation within the nose to such a degree that tubular masses representing casts of a great part of the nasal cavities could be removed. He has been able to follow up the subsequent history of these cases, and has found that this tendency to crust-formation has, after persisting for a few months, completely disappeared. A period then followed during which the nose presented no definite abnormality, but about the third or fourth year examination showed a state of affairs which the author believes from his observation of these and many other cases to be the early stage of ozena. During this early period the characteristic appearance is that of contraction of one inferior turbinal with relaxation of the other; but repeated examination shows that there is neither hypertrophy nor atrophy, since the change from contraction to relaxation and *vice versa* is constantly occurring on both sides. In addition, there is manifest, even during this period, a tendency to drying of the nasal secretion in the form of thin lamellæ, both on the surface of the inferior turbinal and more especially in the posterior part of the inferior meatus. In the three cases above referred to ozena was fully developed about the fifth or the seventh year.

Dr. Baumgarten is of the opinion that true ozaena never makes its appearance after the tenth year. As regards the aetiology of the disease he considers it probable that there exists an anomaly of secretion due to a trophic disturbance, possibly of central origin. The anomaly consists in a diminution of secretion with a tendency to the formation of crusts, which by their pressure on the mucous membrane lead to circulatory disturbance and consequent atrophy.

Thomas Guthrie.

Fein, J.—*The Simple Window-resection*. "Archiv für Laryngol.," vol. xxii, Part III.

The author draws attention to what he considers the advantages in certain cases of the old operation of simple resection of the deformed portion of the nasal septum—resection, that is, of all the constituents, bone, cartilage, and muco-periosteum, so that a permanent perforation is left. The operation, as compared with that of submucous resection, possesses the following advantages: (1) It is very much more easy to perform. (2) It occupies much less time. (3) Imperfect results, such as are not uncommon after the submucous operation, do not occur. One of the principal objections which can be suggested is that trouble, such as crust-formation, a tendency to bleeding, and a whistling sound on respiration, may result from the presence of the perforation. The writer has, however, employed the method in twenty cases, in only one of which was there the slightest subsequent trouble of this kind, and in that patient the crust-formation which occurred was due to the presence of sinus disease. He recalls the frequency with which large septal perforations are discovered in patients who have never suffered the least inconvenience from their presence. It is, in fact, only the small anteriorly situated perforations which interfere in any way with the patient's comfort, and they are, indeed, perforations of this nature which are apt to occur as a result of the performance of the submucous operation in difficult cases.

The author does not suggest that the simple resection should be preferred to the submucous as a matter of routine, but advises the adoption of the former method where the nature or degree of the deformity render a perfect result from the submucous operation uncertain, and when for any reason it is desirable that the operation should be completed as rapidly as possible.

Thomas Guthrie.

Mainwaring-White, R. M.—*Sinusitis Occurring as a Concomitant Complication of Influenza*. "Lancet," November 6th, 1909.

The writer gives a careful description of sinusitis, usually frontal, following acute influenza. The prevailing organism in the secretion is most often the *Micrococcus catarrhalis*, and very rarely the influenza bacillus. Diagnosis is simple. Treatment consists of local measures to reduce the inflammation and allow free drainage, for which purpose he advises steam inhalation of eucalyptus, menthol, etc., and local applications of cocaine or adrenalin.

Macleod Yearsley.

Halasz, Heinrich (Miskolcz).—*A Contribution to the subject of the Ocular Effects of Tumours in the Sphenoidal Sinus*. "Monatssch. f. Ohrenh." Year 43. No. 9.

This article formed one of the papers read at the International Congress at Budapest, and consists in an historical survey of the various

writings on this subject with the authors' own views thereon, and an account of a case of this character which came under his immediate treatment.

A man of thirty-one was sent to Halasz by his own medical attendant, as he was unable to breathe through his nose, and the eye was swollen.

The patient stated that seven months previously he had noticed some impairment in the vision of the right eye, which, however, at first he had been able to correct with the use of glasses. Once in sneezing he had noticed a bloody discharge from the right nostril, since when that side had always been stopped. Soon after this he commenced to have recurrent attacks of headache, and it seemed to him also that the right eye stood out further than the left. For some months the eye at times had been completely blind, and at times it seemed to him that it was only veiled, so to speak. He had had a purulent discharge from the right nostril for the last month, and the headache, which was chiefly occipital, became unbearable. On the 7th of April the right eye suddenly became much more swollen, since when he had had no idea of vision on that side, and the eyelids were distended with extravasated blood.

On examination a red, slightly movable swelling was found filling the right nostril from the anterior end of the middle turbinal and extending backwards so as to be visible by posterior rhinoscopy, though it did not invade the post-nasal space. The left nostril was not involved. A small piece of this growth about the size of a nut was removed through the anterior nares with a cold snare, any further removal being prohibited at this sitting on account of the excessive hæmorrhage. On the next day under cocaine and adrenalin the remainder of the swelling was removed, together with the whole middle turbinal, in order to determine the origin of the growth. An abnormally large ostium of the sphenoidal sinus then became at once apparent, with issuing from it another portion of the growth. The sinus was thoroughly exposed and curetted, and when cleared active pulsation was visible through the large opening formed by the operation.

In spite of the cocaine, the patient suffered considerable pain during this procedure, which he referred to the suboccipital region, and described as if something were being twisted round in his brain.

The convalescence was uneventful, and four weeks after the operation the swelling of the lids and palpebral suffusion had subsided, and the pain in the head and neck ceased, but the sight had not yet returned. The optic neuritis which was present before the operation was not now visible.

Pressure by the tumour on the ophthalmic vein is the explanation given for this condition. No subsequent history is noted. On examination the growth was found to consist of a round-celled sarcoma.

Alex. R. Tweedie.

LARYNX.

Fränkel (Berlin).—*Diseases of the Upper Air-passages in Typhoid Fever.* "Münch. med. Woch.," January 25, 1910, p. 215.

In the eighties Professor Fränkel had great opportunity of observing cases of typhoid in which there were laryngeal complications. The part most frequently affected was the epiglottis, especially its margins, and in the second place the vocal processes or the arytaenoid cartilages. In the latter position there was necrosis of the mucous membrane, the disease

extending to the perichondrium, and leading to a perichondritis with frequently an exfoliation of the cartilage. The writer is of the opinion that typhoid perichondritis, if it occurs apart from an affection of the mucous membrane over it, is extremely rare. With the occurrence of the necrosis in the epiglottis there is sometimes a very considerable degree of œdema. Professor Fränkel has formerly had opportunities of observing the conditions arising in the course of the "week" of the disease with the formation of false membranes, and has been able to convince himself that they are diphtheritic in nature and due to the genuine Loeffler bacillus. He considers those cases in which the vocal processes or arytenoid cartilages undergo exfoliation as particularly dangerous. The continuous wearing of a tracheal cannula is often necessary in these cases, but in a large number of them death ensues from the extreme severity of the typhoid fever.

Dundas Grant.

EAR.

F. R. Packard.—*The Importance of the Thorough Study of the Nasopharynx in the Treatment of Diseases of the Ear.* "Laryngoscope," xix, 576.

A good practical paper. The conditions found are classified thus:—1. Adenoids. 2 "Catarrhal affections" (mostly due to nasal conditions). 3. Atrophic, with crusts. 4. Tumours. 5. Adhesions. The treatment advocated for adhesions is—cleansing the naso-pharynx, breaking down with the finger, and the application of solutions of silver nitrate, or of albuminate of silver, to the torn surfaces.

MacLeod Yearsley.

Fallas, A. (Brussels).—*Mastoiditis and Retro-pharyngeal Abscess.* "La Presse Oto-laryngologique Belge," February, 1909.

Besides narrating a case of his own, the author gives abstracts of twenty-six other cases collected from medical literature. In discussing the anatomy of the post-pharyngeal region, attention is directed to the lymphatic glands of the part, which form a chain on either side of the median raphé (Most).

The possible channels of infection are various. In a case noted by Kessel the pus from the ear passed through the tegmen tympani, into the middle cranial fossa, and thence through the foramen ovale, and the foramen rotundum to the back of the pharynx. In a case recorded by Knapf the pus travelled down the canal of the tensor tympani into the cellular tissue round the Eustachian tube, and so on.

A lateral pharyngeal abscess may break through the natural barriers and so reach the retro-pharyngeal space.

Another mode of infection is by extension of caries to the basilar process or the cervical vertebrae, either from abnormally developed mastoid cells or by extension from the apex of the petrous bone. Lastly, there is a possibility, the author thinks, of a metastatic retro-pharyngeal abscess in the course of otitic pyæmia.

Retro-pharyngeal infection may follow chronic, as well as acute, otitis media. Other etiological factors are retention of pus, exacerbation of the virulence of the microbes, a debilitated state of the patient, and particularly tubercular infection.

In discussing treatment, the author prefers to incise the abscess

through the pharynx, except when there are special indications demanding an external incision. A full bibliography concludes the article.

Chichele Nourse.

Fournié, Jacques (Peau Hospital).—*Mastoiditis with Multiple Lesions during Otitis Media Acuta.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," September, 1909.

On February 16, 1909, the author saw a male, aged sixteen, suffering from a discharge of the left ear and mastoid pain. There had been a discharge from the same ear eight days previously, which, with the attendant pain, ceased after forty-eight hours. Examination: Membrana tympani hyperemic, slightly bulged behind; small perforation in the antero-inferior quadrant. Mastoid region appeared slightly swollen. No pain on pressure at the base; the apex was very tender; posterior border of mastoid slightly painful. No torticollis. No rise of temperature. Provisional treatment, free paracentesis and moist dressings.

February 22.—Mastoid operation. On denuding the bone a blackish, plate-like sequestrum was seen at the apex, and on turning aside the tendinous fibres of the sterno-mastoid a purulent cervical fistula was exposed. In front of the necrotic area the apex was markedly incurved beneath the meatal orifice. On removing the apical cortex a large quantity of pus, necrosed bone, and blackish granulations were seen and removed. Attention was next directed to the antrum. At about the centre of the mastoid process, a little behind the meatus, the gouge came upon a depressible bluish-white tissue, which made the operator think of the lateral sinus. After clearing away this doubtful area the sinus was seen covered with a smooth, thin osseous plate, having the suppleness of dura mater. After free exposure of the sinus granulations were observed on its wall, but no pus. The antrum, deeply situated and difficult to find, contained granulations and pus without tension. The dura mater at the tegmen antri had been pathologically exposed and was covered with granulations. Full details as to the operative technique and treatment are given. The patient recovered by the end of March. The author remarks on the rapidity and latency with which these lesions were characterised. Only fifteen days after the onset of the auricular infection there were granulations on the dura and lateral sinus, with an extensive necrotic focus at the apex; the latent character of the lesions had not, however, been general, for the apical lesion formed rapidly, and was rendered evident by sharp pains seven days after the first appearance of the meatal discharge. Absence of torticollis is worthy of note. In discussing the pathogenesis of the mastoiditis, the author mentions that in a recent article he tried to show that default of paracentesis in otitis media acuta is not such an important factor in favouring mastoiditis as it is frequently held to be. In this particular instance the absence of auricular pains after cessation of the first otorrhea showed that during the succeeding days there had been no retro-tympanic tension. Moreover, the very small antrum was incapable of serving as a reservoir for the overflow of the tympanum. The writer concludes that there had been a violent but ephemeral reaction on the part of the tympanic mucosa against the septic agents. The infection, to use the phraseology of Lermoyez, had "licked the tympanum" certainly rather severely, and almost simultaneously "bitten the mastoid," where it took root. The remoteness of the three lesions observed and the formation of granulations, dural and peri-sinusal, in less than fifteen days, seem to indicate the serpiginous

course (probably lymphatic) of the microbic agent, which would have invaded the mastoid notwithstanding early paracentesis.

H. Clayton Fox.

Sewell, Lindley.—*A Case of Chronic Suppurative Otitis Media with Labyrinthine Fistula and Spontaneous Nystagmus.* "Lancet," January 1, 1910.

Girl, aged six. Right discharge four years after measles. Headache, vomiting, and dizziness eight days before admission. Foul pus and epithelial debris, posterior superior perforation, small granulations. No mastoid swelling or tenderness. Gait unsteady, tumbling to right, sometimes to left (over-correction). Romberg, fell to right. Spontaneous horizontal nystagmus to left, less marked on extreme deviation to right; increased by caloric test. Nystagmus to right on air-pressure. Voice heard at four feet. No apparent impairment in auditory perceptive apparatus. No strabismus, no optic neuritis. Pulse 84, temperature 97° to 98.6° F. Radical mastoid; temporal bone hollowed by foul cholesteatoma; tiny fistula in external canal; stapes present. Recovery uninterrupted; gait steady in three weeks. Nystagmus diminished slowly; present slightly on deviation of eyes to left three months later.

Macleod Yearsley.

MISCELLANEOUS.

Simpson, W. K.—*Clinical Experiences with Calcium Lactate in Hæmorrhages of Upper Respiratory Tract.* "Boston Med. and Surg. Journ.," November 25th, 1909.

A description of the uses of calcium lactate in hæmorrhages, and to less dangers of bleeding in operations. The cases treated were mostly severe forms of epistaxis, and seventy-five cases of removal of tonsils and adenoids. The dose in an adult may be sixty grains as an initial dose, repeated in twenty-four hours, or thirty grains three times a day, taken when the stomach is free from food. In children, thirty to twenty grains as a first dose, then twenty or ten grains thrice daily. The salt should be given three days before and three days after operation.

Macleod Yearsley.

REVIEWS.

The Frontal Sinus: Contributions to the Topographical-Surgical Anatomy and to the Study of the Diseases of the Frontal Sinus [Die Stirnhöhle: Beiträge zur Topographisch-Chirurgischen Anatomie und zur Lehre von den Erkrankungen der Stirnhöhle]. By Prof. A. ONODI. With 107 illustrations taken from life-sized photographs. Vienna and Leipzig: Alfred Hölder, 1909.

Professor Onodi has in this work, as in the others which we have previously had the advantage of studying, appealed to Nature to supply us with facts, and it is with facts that his book is filled. In the eighty-

three pages we find the results of the examination of 1200 skulls, examined by means of electric transillumination and Röntgen photography. The comparison of the results given by transillumination and by radiography are most striking and conclusive. These show that in the case of the frontal sinus transillumination is of no absolute value, whereas the radiographic results are almost invariably confirmed, both as to the extent and condition of the frontal sinuses when they are laid open. Thus he found in the 1200 skulls that transillumination indicated absence of the frontal sinuses on both sides in 30 per cent. and on one side in 20 per cent., a result shown to be entirely fallacious, whereas the Röntgen-ray examination revealed the absence on both sides in only 5 per cent. and on one side alone in only 1 per cent. (p. 57). Pus and sero-pus, according to examination and experiment (p. 61), are found to give no shadow on transillumination. The work contains 107 figures of life size, made from actual photographs, and a study of these, including in particular the representations of what Professor Onodi aptly terms "the frontal bulla," will amply repay the reader. The abstracts of the writings and utterances of the various authorities on the subject, including the discussions in the International Laryngological Congress of 1908, will be found invaluable to the reader who wishes to bring his knowledge quite up to date. The presentation here made of the author's investigations and the illustrations drawn from Nature will be found of great value in relation both to the intra-nasal and external surgery of the part. "They will be found to increase our knowledge of the aetiology of diseases of the frontal sinus and its applications, and finally to diagnose all diseases of this cavity." It is with these words that the author concludes the work, and we can only say that he is not over-valuing the material which he has here prepared for us.

D. G.

Diagnosis and Treatment of Diseases of the Nose [*Diagnostic et Traitement des Maladies du Nez*]. By Dr. J. GAREL. Third edition. With 145 figures in the text and 4 plates. Paris: Vigot Frères, 1910.

In a compact volume of 458 pages Dr. Garel presents us with the third edition of his work on the diagnosis and treatment of diseases of the nose. Dr. Garel is well known by his valuable contributions to our specialty, and the description of the methods of examination by anterior and posterior rhinoscopy is particularly clear, and full of little details with regard to illumination which are well worth reading. For the sake of completeness he describes many forms of palate hooks, but, in common with other practitioners, winds up by stating that he does not use them. He is a believer in the injurious effect of nasal obstruction in regard to the acquisition of tuberculosis, and is somewhat sceptical as to the influence of glycosuria in producing dryness of the throat. The production of local anæsthesia is given in considerable detail, and he sums up (p. 110) by stating that his predilection is in the first instance for cocaine, the danger of which is very small as long as it is not administered by submucous or subcutaneous injection. He makes use of alypin and occasionally of novocain, using alypin in particular when operating on the posterior extremities of the turbinated bodies, as it does not produce the vaso-constriction which results from cocaine. In referring to eucaine he omits any observation regarding the solubility of the lactate. There is an interesting section on the action of liquids introduced into the nasal fosse according as they are hypertonic, hypotonic, and isotonic (p. 118). In

regard to acute purulent rhinitis he reminds us of the form which occurs during the second dentition, first described by Bosworth, and which is probably the commencement of many of our cases of so-called ozæna (p. 162). He speaks in favour of paraffin injections in cases of atrophic rhinitis, and recommends in particular Gault's simple injector (p. 219). He is very definite in quoting the opinion of Professor Renaut and others that giant-cells are not diagnostic of tuberculosis, and that they are often to be found in syphilitic lesions (p. 236). Among other practical recommendations is that of throwing into alcohol any tissue removed if there is any question as to its papillomatous nature as distinguished from lupoid (p. 241). The rhino-reaction of tuberculin is mentioned with approbation (p. 242).

There is much of interest in connection with the diagnosis and treatment of diseases of the accessory cavities, as we find in Dr. Garel a more conservative spirit than is usually manifested. He is sufficiently unconventional to hold that the alveolar opening is preferable in the majority of cases. The book is enriched with 145 figures in the text and 4 plates. There are several stereoscopic views, and among others several borrowed from the stereoscopic atlas of Drs. Garel and Collet. Acknowledgments of the views of other writers are very freely interspersed, and we find evidence of the study and appreciation of the writings of our British *confrères*. The book deserves every recommendation as being practical and complete. D. G.

Diseases of the Larynx, Nose and Ear [*Kehlkopf-, Nasen- und Ohrenkrankheiten*]. By Dr. RICHARD KAYSER (Breslau). Sixth, revised edition, with 134 illustrations. Berlin: S. Karger, 1909.

The perusal of the first edition of Dr. Kayser's work on diseases of the larynx, nose and ear was a source of wonderment and gratification in view of the extraordinary amount of practical information conveyed in the small space allowed himself by the author. It is not surprising to us that a number of editions should have been called for, and that now we have the pleasure of appreciating in the sixth edition the qualities of the first, with the substance brought up to date. The focal length of the forehead mirror required for our work is more correctly given than in many of our standard books, namely, from six to eight inches (15-20 cm.). Many of the original illustrations, which, though diagrammatic, are extremely accurate, remain, and the number has been added to by more recent additions to our armamentarium as they have arisen. Thus we find Killian's tube-spatula, Leduc's powder-inhalation tube, Killian's self-retaining wire nasal speculum, Onodi's olfactometer, and the author's sound-conducting rod (Schallstab). Among other more recent developments we may refer to the investigations of sclerosis of the middle ear with involvement of the labyrinth; these receive very clear statement in wonderfully few lines. The writing is extremely lucid, and the work would form a most useful reader to any student of our specialty who might wish to study German and acquire a knowledge of the vocabulary of our specialty in a short time. D. G.

THE
JOURNAL OF LARYNGOLOGY,
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INFANTILE TYPE OF MASTOID.

It will be generally admitted that extension of acute suppurative inflammation from the tympanum to the mastoid cells is most commonly found in temporal bones in which the mastoid part approaches most nearly to the pneumatic type. In chronic cases, on the other hand, operation usually reveals a remarkable absence of pneumatic cells and an extreme degree of density of the bone covering the antrum.

In the pneumatic mastoids the frequency with which purulent extension takes place has been theoretically explained by the late Professor Bezold (1). He pointed out that the fewer the dissepiments in the mastoid cavities the less the amount of surface presenting a protective phagocytic mechanism, and hence the tendency to purulent invasion. No doubt, also, when a cavity is large and its neck small it is easy for the outlet to become partially or completely occluded and for the cavity to be shut off without means of exit for its purulent contents, as described by Professor Politzer (2) as occurring in influenza.

The density of the bone met with in cases of chronic suppuration which call for operation has often been attributed, with some show of probability, to a condensing osteitis occasioned by the chronic inflammation started in the mucous membrane. If this is true in any cases, it is not the real explanation in the majority, and Mr. Cheatle's arguments in favour of it being really the persistence of an infantile type are most convincing. He has

produced a large number of specimens in which no evidence of disease was present and in which this condition was well marked, and therefore could not rightly be designated "osteo-sclerosis." When he brought the matter before the Otological Society in 1907 (3) some members asked for microscopical evidence that the condition was not an inflammatory one, but to the majority the naked-eye appearances seemed quite conclusive. Mr. Cheatele showed some more recent additions to his collection at the last meeting of the Otological Section of the Royal Society of Medicine (4), and these gave still further support to his interesting explanation.

In association with this question, the description of the typical mode of development of the mastoid cavities, as given by Prof. Symington (5), is of considerable interest, though dating as far back as 1886: "After birth the external petro-squamous suture becomes obliterated, this process being generally completed by the end of the first year, if not sooner. About the same time the mastoid process becomes distinct. There is a continuous formation of new bone from the periosteum on the surface, so that the external and inferior walls of the antrum become gradually thicker and thicker. Thus in a new-born child the outer wall is only 1 or 2 mm. thick; by the age of five years it is about 6 mm., while in the girl, aged nine years, it was nearly a centimetre. The new bone is fine cancellous tissue. At about puberty this tissue undergoes a process of partial absorption, by which it is converted into a number of communicating air-cells, which are lined by a delicate mucous membrane."

It will thus be seen that the bone should in the average case be at its least favourable condition for the outward escape of pus or for access by surgical operation at or just before puberty; and in the discussion in the Otological Society referred to, Dr. Dundas Grant (6) stated that in his experience some of the most troublesome cases he had to deal with had been those of boys at that period of life, with extremely thick and dense bone over the antrum.

The study of Mr. Cheatele's specimens would be a work of profit and pleasure to anyone who has dealt with the temporal bone, and he has generously invited all the members of the Otological Section to visit his collection for this purpose. We are quite sure that the invitation is not limited to them, and we strongly counsel our readers to take advantage of it.

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REPORT (FOR 1908) OF THE EAR AND THROAT DEPARTMENT OF THE EYE, EAR, AND THROAT INFIRMARY, EDINBURGH.

Under the charge of DR. W. G. PORTER.

BY W. G. PORTER, M.B., B.Sc., F.R.C.S.E.,
Surgeon, and

J. M. DARLING, M.B., M.A., F.R.C.S.E.,
Assistant Surgeon.

WE venture to report on the work done in the above Department during the year 1908, not because we have a large number of cases of outstanding interest to describe, but because we think that such reports on considerable numbers of carefully observed and recorded cases must always be of value. Their value, we believe, will increase, as we hope to make a similar report on the work of the Department year by year.

The percentage of interesting cases from the clinical standpoint is no doubt less than in a special department of a large general hospital, for the majority of the patients come without the recommendation of a medical man, but this perhaps gives a truer picture of the incidence of the various conditions met with in the speciality.

The new cases seen during the year numbered 1194, and of these fifty-three were treated in the wards. The total number grouped below is rather more; this is to be accounted for by the fact that many of the classes overlap.

The notes in some of the more interesting cases are unfortunately somewhat incomplete. It was, however, frequently impossible for us to find time to carry out examinations, which, though adding greatly to the value of a case as a clinical study, do not necessarily afford guidance as to treatment.

I. AFFECTIONS OF THE EXTERNAL EAR—197 CASES.

Wax in the ear, 181; furunculosis, 8; eczema of meatus, 4; impetigo contagiosum of the auricle, 2; hyperostosis of the external meatus, 2.

II. AFFECTIONS OF THE MIDDLE EAR—356 CASES.

The right ear was affected in 23·3 per cent., the left in 22·1 per cent., and both ears in 54·6 per cent.

A. *Acute Catarrh of the Middle Ear*—24 Cases.

In this group we include cases of temporary and recent Eustachian obstruction.

In 41·6 per cent. of the cases there was a definite pathological nasal or pharyngeal condition. Cases of adenoids exhibiting this condition are not included.

B. *Acute Suppurative Otitis Media*—47 Cases.

The majority of these cases occurred during February and October, but a few occurred during every month of the year. 61·7 per cent. were males, 38·3 per cent. were females; 23·4 per cent. were under six years of age, 17 per cent. between six and ten, 12·7 per cent. between eleven and fifteen, 2·1 per cent. between sixteen and twenty, and 44·6 per cent. over twenty. There were none over fifty years of age. Some pathological condition of the nose or naso-pharynx was observed in 55·3 per cent., adenoids being present in 38·3 per cent.

Paracentesis of the tympanum was performed in three cases. In only one instance was it found necessary to open the mastoid antrum, and that case was first seen after a sub-periosteal abscess had formed behind the auricle.

C. *Chronic Middle-ear Catarrh*—110 Cases.

41·8 per cent. occurred in males, 58·2 per cent. in females; 27·2 per cent. were twenty years and under, 23·2 per cent. between twenty and thirty, and 45·4 per cent. over thirty.

Nasal treatment was called for in 26·3 per cent. of the cases.

We found this a most unsatisfactory group of cases to classify, and we include in it cases of chronic Eustachian obstruction and cases of mixed deafness where the obstructive element appeared to

predominate. In two cases we found that the classical triad of symptoms which Bezold showed justified the diagnosis of otosclerosis, a proportion much lower than is found in the statistics of many observers.

D. Otitis Media Chronica Suppurativa.—177 Cases.

51.9 per cent. were males, and 48.1 per cent. females; 15.2 per cent. were under six years of age; 12.9 per cent. between six and ten, 10.1 per cent. between eleven and fifteen, 12.9 per cent. between sixteen and twenty, 19.1 per cent. between twenty and thirty, and 29.3 per cent. over thirty. Of the 68 cases of fifteen years and under, 88.3 per cent. suffered from adenoids. 53.1 per cent. of the total cases presented some definite pathological condition in the nose or naso-pharynx. The radical mastoid operation was performed in 14 cases—*i. e.* 7.3 per cent.

One patient, an unmarried woman, aged twenty-four, developed an attack of acute mania fourteen days after the operation, and had to be removed to an asylum.

One case died of an intra-cranial complication.

The patient was a labourer, aged fifty, who had suffered from double suppurative otitis media for many years. He came to hospital complaining of pain in the left ear, of two weeks' duration. The left external auditory meatus on examination was found to contain a hard concretion bathed in stinking pus. On removing the concretion, which was unfortunately lost, there was found to be a total defect of the membrana tympani. The results of the tuning-fork tests were those of middle-ear deafness. There was no giddiness nor vomiting, and no tenderness on pressure over the mastoid process. The patient was instructed to syringe with a solution of boracic acid and to instil peroxide of hydrogen drops. Three days later he returned with a complete facial paralysis on the left side. He was then admitted to hospital and his left mastoid process opened (June 14). The bone was found to be extensively diseased, the antrum large and full of cholesteatoma; the posterior meatal wall and the external attic wall were almost completely destroyed. The radical operation was performed, the cavity thoroughly cleared out, and the skin wound closed. A few days after the operation the cavity became extremely foetid with copious discharge. The skin wound broke down entirely, and counter-openings had to be made about two inches below the tip of the mastoid process to give free drainage. For about three

weeks the cavity was dressed once or twice daily without any apparent improvement in the septic condition. The tissues showed little or no reaction. Microscopic examination excluded the possibility of malignant disease. There was no rise of temperature or pulse-rate. The general condition of the patient was apparently satisfactory. He took his food well, and, though inclined to sleep a good deal, he was easily roused and talked intelligently. He did not vomit nor did he complain of pain. On July 6 he was noticed to be distinctly more drowsy, and he vomited for the first time since the operation. On July 8 the drowsiness continued. Vomiting was frequent, and had no connection with the taking of food. He complained of vertigo so violent that he had to hold on as he lay in bed. Nystagmus was pronounced in all directions. Dr. J. V. Paterson, who kindly examined the eyes, reported the fundi normal. The grip of the right hand was slightly weaker than that of the left, but, apart from the facial paralysis, the motor functions were otherwise normal. There was no headache. The patient had no difficulty in naming objects and talked quite intelligently when roused. The pulse-rate was 80 per minute, and the temperature 98° F. The whole condition was thought rather suggestive of extension of the disease to the labyrinth. On July 9, however, the patient was distinctly more ill and inclined to be delirious. The pulse-rate was 64 per minute and the temperature 98° F. Examination of the blood showed 11,100 leucocytes per cmm, with 90 per cent. polymorphonuclears. It was noted that he had been rapidly losing flesh during the last few days. The clinical picture was now much more like that of cerebellar abscess. It was decided, therefore, to explore the cerebellum. The patient was anaesthetised with chloroform. The skin was incised (J. M. D.) in a backward direction at right angles to the old incision, and the lateral sinus freely exposed. An area of the cerebellum about the size of a shilling was then laid bare with gouge and forceps behind the sinus. On incising the dura the brain-tissue bulged into the wound and pulsated very feebly. Dressing forceps were then passed into the brain-tissue towards the posterior aspect of the petrous bone. There escaped immediately about an ounce of thick, creamy, very fætid pus. A large drainage-tube was inserted into the abscess cavity, the wound dressed, and the patient returned to bed. He did not recover consciousness, and died about twenty-four hours afterwards.

A *post-mortem* examination was conducted by Mr. Henry Wade. There was no general meningitis and no further collection of pus in

the brain. The posterior part of the petrous bone showed an area of necrosis about the size of a sixpence. A horse-hair could be passed through the bone from the cranial aspect to the antral cavity.

The case resembled the majority of such cases in several points, to which attention has been called by Neumann (1) and others. Thus, though the age was atypical (most cases occurring between the ages of ten and thirty), the patient was of the male sex, the abscess followed on chronic middle-ear suppuration, and the left was the side affected. The diagnosis was founded on the presence of active middle-ear suppuration on the left side, drowsiness, vomiting, tendency to subnormal temperature and slow pulse, nystagmus, and rapid emaciation. The results of the blood-examination—a high polymorphonuclear percentage, with a relatively small number of leucocytes per c.mm.—were also suggestive of intra-cranial abscess. Changes in the fundus oculi, which are said to be commonly associated with cerebellar abscess, were not present. The case illustrated well the difficulty which sometimes arises in distinguishing between labyrinth suppuration and cerebellar abscess. Application earlier in the course of the case of the tests suggested by Bárány might possibly have assisted to a more rapid diagnosis. According to Neumann, the cerebellar abscess in such cases is usually secondary to labyrinth suppuration. The path of infection in this case was obviously directly through the posterior wall of the antrum. A point of interest in the case was the complete lack of reaction shown by the patient throughout—the cadaverous appearance of the wound, the absence of any rise in temperature or pulse-rate, the absence even of any marked degree of pain, and the relatively low leucocytosis.

III. DISEASES OF THE INNER EAR—NON-SUPPURATIVE, 64; SUPPURATIVE, 1.

Sex.—Males, 42; females, 23.

Ages.—Forty and under, 15; 41–50, 8; 51–60, 14; over 60, 28.

Side.—Right, 6; left, 9; bilateral, 49.

In 10 cases the deafness was the result of following a noisy occupation.

Two cases of deaf-mutism were met with, due to cerebro-spinal meningitis.

Two cases were probably a result of syphilis.

The remainder were apparently cases of primary disease of the

inner ear, two of which had come on acutely, showing Ménière's symptom-complex, while in the remainder the onset was insidious.

One case of labyrinthine suppuration also came under treatment.

The patient, G. R—, aged thirty-nine, had been previously in hospital, October, 1907, and the radical mastoid operation had been performed on both sides for chronic otorrhœa of many years' standing, accompanied by headaches and giddiness.

The patient was markedly improved at first by these operations, but again returned for treatment on May 25, 1908. He now complained of giddiness, severe tinnitus, and a tendency to fall to either side when walking, but no vomiting. He was apparently quite deaf on the right side; he could hear a loud voice on the left. On examination of the ears both cavities were found to be dry, but stenosed at the inner end; there was some crusting in the right ear. He could stand with feet together and eyes closed, but swayed slightly. He could not stand on either foot alone (eyes open), nor could he hop along a straight line. There was no spontaneous nystagmus, and nystagmus could not be produced by syringing with hot or cold water or by rotating the patient.

A tuning-fork could be heard by bone-conduction probably only on the left side; not heard by air-conduction.

The patient was in such distress from his symptoms that it was decided to explore the labyrinth of the ear. The right side was selected as there was no hearing in that ear. The cavity was opened (W. G. P.) through the old incision; some dense fibrous tissue filled the inner part of the middle ear. The bony cavity was enlarged as far as possible, but not very much, as the lateral sinus was exposed far forward and the dura mater lining the middle cerebral fossa appeared rather low.

The site of the horizontal semi-circular canal was seen to be occupied by a mass of granulations. At the first operation there was no erosion of the bone here. These were removed by a curette, and exposed a cavity about the size of a swan shot, which was proved to be the vestibule, as a probe could be passed through the fenestra ovale into it; part of the bony canal supporting the facial nerve was wanting here, the facial nerve being simply buried in granulations. The face twitched several times at this stage of the operation when the nerve was touched. The cochlea was intentionally left undisturbed. Packing was placed in the middle ear and vestibule, and the posterior wound was left unstitched. Complete facial paralysis developed immediately after the operation. Healing was uneventful, and the vestibule was

allowed to granulate up. The symptoms of giddiness and staggering gait passed off, and the patient is now—September, 1909—able to work in his shop. He still, however, suffers from timitus. The upper part of the face has recovered from the paralysis, the mouth is still slightly drawn. This is, however, hidden by his moustache.

It was difficult here to decide on which side to operate, as the tests above detailed pointed to affection or rather to destruction of the vestibular apparatus on both sides. The choice was decided by the fact that the hearing on the right side was entirely gone. It is contrary to the practice of the Viennese School to be content with such a very incomplete operation as was here performed. No doubt complete ablation of the labyrinth would have been the normal operation, but having found so much disease in the vestibule it was deemed advisable to wait rather than risk the setting up of meningitis by further interference. It would have been quite easy to have completed the operation at a later date should circumstances have rendered this course advisable.

DISEASES OF THE NOSE AND ACCESSORY SINUSES—128 CASES.

(1) *External Nose*, 8 cases: Lupus, 4; furuncle, 2; eczema, 1; perverted action of *alæ nasi*, 1.

(2) *Nasal Cavities*.—Chronic hypertrophic rhinitis, 46 cases; of these 13 were males, 33 females. Nasal polypus not associated with accessory sinus disease, 17 cases. Atrophic rhinitis, 7 cases; four of these were associated with the crusting and fœtor characteristic of *ozæna*. Epistaxis, 3 cases.

In one of these the hæmorrhage proved fatal; it occurred in a female, aged twenty-two, who was suffering from purpura hæmorrhagica. The patient was admitted to hospital in a very weak condition, having had numerous nasal hæmorrhages during the preceding fortnight. On first examination a bleeding vessel was seen on the anterior part of the septum; this was cauterised with chromic acid, but the bleeding area extended rapidly backwards, and it was utterly impossible to check the hæmorrhage, in spite of the exhibition of calcium chloride, and although the posterior nares and nasal cavities were plugged. The patient died three days after admission. Unfortunately the blood was not examined in this case, and a *post-mortem* examination was not permitted.

Septal deviation, 36 cases.

Seventeen cases were operated upon, submucous resection being performed in each case.

Abscess septum, 1 case; F—, aged eight.

There was a history of a fall on the nose a fortnight previous to admission. On opening the abscess no cartilage could be felt; it had evidently broken down. Marked sinking of the bridge of the nose occurred after healing, which is, we believe, unusual.

Malignant disease of the nose, 1 case (inoperable); reflex nasal neuroses, 5 cases.

(3) *Accessory Sinus Operation*, 6 cases: antral suppuration, 5 cases; antral and ethmoidal suppuration, 1 case.

The radical operation on the maxillary antrum was performed in four cases, and in each case resulted in cure.

DISEASES OF THE PHARYNX—68 CASES.

Acute and subacute pharyngitis, 6 cases; granular pharyngitis, 4 cases; tertiary syphilis of the pharynx, 5 cases; keratosis pharyngis, 1 case; pharyngitis sicca, 6 cases; chronic pharyngitis, 16 cases; acute tonsillitis, 10 cases; peritonsillar abscess, 4 cases; chronic hypertrophy of the tonsils, where no adenoid vegetations were present, 14 cases; enlarged lingual tonsil, 1 case; non-specific ulceration of the tonsil, 1 case.

This patient, a boy, aged eight, complained of sore throat which had lasted a week. On the right anterior pillar a circular superficial ulcer was seen surrounded by a zone of redness. The ulcerated area was covered by a thin greyish deposit. There was no evidence of syphilis either in the boy himself or the father, who was also carefully examined. A swab was taken, but only the ordinary organisms found in the mouth were detected. The ulcer healed in three weeks under purely local treatment. Possibly the condition was the same as that described by Heryng as *angina ulcerosa benigna*.

DISEASES OF THE NASO-PHARYNX.

Adenoid Vegetations—283 Cases.—Males 142; females 141.

Ages.—5 and under, 77; 6 to 10, 98; 11 to 15, 76; 16 to 20, 21; over 20, 11.

DISEASES OF THE LARYNX—29 CASES.

The small number of laryngeal cases which came under observation, 2.5 per cent. of the total cases, is remarkable. We were,



× 75 diam.

TO ILLUSTRATE MR. W. G. PORTER AND MR. J. M. DARLING'S REPORT (FOR 1908) OF THE EAR AND THROAT DEPARTMENT OF THE EYE, EAR, AND THROAT INFIRMARY, EDINBURGH.

however, fortunate in seeing three cases of unusual interest and importance; two of these have been published elsewhere—(2) and (3).

Acute Laryngitis—5 Cases.

In one of these there was marked œdema of the epiglottis and ary-epiglottic folds. The patient, a man, aged twenty-one, was admitted to hospital because of the possibility of asphyxia supervening. Fortunately the œdema disappeared in a week under expectant treatment. This is distinctly an unusual case, because acute primary œdematous laryngitis occurs most commonly, as Morell Mackenzie pointed out, in those who are exposed to septic influences. Massie and Fasano both stated their belief that these cases are in reality erysipelas of the larynx. The present one, however, does not come into that category.

Chronic laryngitis, 2 cases; laryngitis sicca, 2 cases; tuberculosis of the larynx, 6 cases; syphilis of the larynx, 3 cases; pachydermia laryngis, 1 case; keratosis laryngis, 1 case (2); functional aphonia, 5 cases; rhythmical movements of a vocal cord, 1 case (3); singer's node, 1 case.

This patient, a female, aged thirty-four, a singer by profession, was found to have a projection on the edge of the left vocal cord at the junction of the anterior and middle third. It was removed by Moritz Schmidt's forceps (W. G. P.). The functional result was perfect. As the operation is by no means easy, and it was possible here to remove the node as a whole, a micro-photograph of the section is reproduced. It shows on the surface several layers of epithelium; below this is vascular connective tissue, in one part of which the nuclear stain has taken somewhat faintly. Having been successful in obtaining a good functional result in two cases operated on in private, it would appear hardly right to adopt Semon's advice in these cases and condemn such patients to a prolonged period of voice rest.

CARCINOMA OF THE LARYNX—I CASE.

The patient, Mrs. B—, aged fifty-nine, presented herself at the infirmary on October 22, 1908, complaining of hoarseness of two years' duration; this was the only symptom, and the general health was excellent.

On examination of the larynx the right false cord was found to be swollen, the right cord being hidden. The arytenoid cartilage

moved apparently quite freely on phonation. A portion of the growth was removed for examination. Mr. Henry Wade, who kindly made the examination, reported that it was undoubtedly malignant, probably epithelioma.

The patient was exceedingly fat and had a very short neck, and was therefore not an ideal subject for operation. Thyrotomy (under CHCl_3) was performed (W. G. P.), the trachea being opened first and an ordinary tracheotomy tube inserted, and the patient then placed in the Trendelenberg position. On opening the larynx the tumour was seen to involve the anterior end of the left false cord and both false and true cords on the right side. Good illumination was obtained by means of a head-lamp. A solution of cocaine and adrenalin was applied to the interior of the larynx. Both cords were removed on the right side and the whole of the left false cord; the left true cord was not interfered with. The cantery was then applied to the raw area. The thyroid cartilage was closed by two catgut sutures (Van Horn No. 4, 10 day), the tracheotomy tube removed, and the trachea closed. The muscles were united by deep sutures and the skin-wound closed. The patient was returned to bed and placed in a sitting position. At first she was congested and coughed up fresh blood, but she gradually became quieter, the bleeding ceased, and after an hour she was left with the nurse for half an hour. During that time the patient had a sudden attack of asphyxia, and Dr. J. V. Paterson, who was in the house, with great presence of mind immediately opened up the wound and again introduced the tracheotomy tube, and she recovered. The tube was then tied in. The following day the tube was removed, and on testing her it was found she could swallow. Three days after the operation symptoms of pneumonia appeared, and she died on the sixth day.

At the *post-mortem* operation the lower lobe of each lung was found to be consolidated, and the heart showed fatty changes.

The larynx was removed for further examination. On dissection one or two glands were found on each side along the great vessels. These were examined microscopically, but no trace of malignant disease was found.

The case is interesting, first from the rarity of an intrinsic malignant tumour in a woman. Sir Felix Semon (4), whose experience of malignant disease of the larynx is unrivalled, states that in a series of 212 cases seen by himself only twelve cases of intrinsic cancer occurred in women as against 124 in men.

It further raises the question as to the advisability of leaving

in a tracheotomy tube after the operation. That modification of the operation was introduced by Butlin, and is adopted by Seimon himself, and by Moure, of Bordeaux, who also has a large experience of these operations. No doubt in this case the extreme obesity of the patient tended to the failure of the method. In a future case we should be inclined to remove the tube but leave the wound open and merely covered by gauze so that a tube could immediately be inserted if necessary. This would necessitate the presence of some skilled assistant for at least the first twenty-four hours. It must be remembered that if a tracheotomy tube is left in for several days until the patient is accustomed to it, he has always to be carefully watched for the twenty-four hours after the removal, in case of asphyxial attacks. We should also adopt Seimon's advice of painting the larynx with cocaine alone, for he states that in one case, after the use of adrenalin with cocaine, he met with a more copious bleeding after the operation.

MISCELLANEOUS CASES—76.

This group includes cases not belonging to the specialty.

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CASES OF ACQUIRED DEAF-MUTISM DUE TO CONGENITAL SYPHILIS.

By MACLEOD YEARSLEY, F.R.C.S.,

Senior Surgeon to the Royal Ear Hospital; Medical Inspector of
L.C.C. Deaf Schools, etc.

THE relation of congenital syphilis to acquired deaf-mutism has not hitherto received much attention, and, with one or two exceptions, has been very little mentioned.

During the past two years I have been making a detailed physical and functional examination of 500 of the scholars in the deaf centres of the London County Council, the particulars of which I hope soon to be in a position to publish in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY. Of these 500 cases, 229 were congenital and 225 were acquired, 46 being doubtful, and

out of these 225 acquired cases I found 17 instances of congenital syphilis, of which 9 were boys and 8 girls; these cases form the basis of the present paper. Before attempting any analysis, it will be best to relate briefly the particulars of each case.

Boys.

I. A. A —, born January, 1897. Deaf at ten years. Eyes affected first, date uncertain. The only one deaf out of seven (five alive). Teeth normal. Corneal opacities. Both Mt. opaque and markedly indrawn, mallei mobile. Nasal septum to R. Throat *nil*. Totally deaf to bell, voice, Edelmunn-Galton whistle and all forks by air-conduction. Bone-conduction (C128) R. — 34", L. — 32". Has "drumming" tinnitus. No vertigo. Speech natural, but deaf in tone. Node on left tibia.

II. G. C —, born January 18, 1900. Deaf at six years. Date of onset of eye symptoms uncertain. No family history obtainable. Teeth typical. Old interstitial keratitis, irides adherent to lenses. R. Mt. thickened and indrawn, malleus fixed; L. Mt. thickened, with local atrophy at umbo. Nose and throat *nil*. Hears voice close to L., not at all R. Bone-conduction R. — 25", L. — 20". Some response to Edelmunn whistle, but this and reactions to forks by air quite unreliable. No tinnitus or vertigo. Speech natural.

III. C. H. C —, born October 18, 1894. No history obtainable. No family history obtainable; is illegitimate. Teeth typical. Old interstitial keratitis, disseminated choroiditis, vision $\frac{2}{30}$. Both Mt. thickened, dry anterior perforations. Middle turbinals large; adhesion between septum and R. inferior turbinal. Slight cleft (? scar) of soft palate. Totally deaf to bell, voice, Edelmunn whistle, and all forks. No bone-conduction. No tinnitus or vertigo. Voice natural.

IV. L. O. G —, born January 7, 1897. Deaf at nine years. Date of onset of eye symptoms uncertain, but was "blind" for six months. One of a family of six, of whom only two are alive. Teeth normal. Corneal opacities. Both Mt. thickened and indrawn; mobility of mallei impaired. Nose *nil*. Tonsils slightly enlarged; chronic pharyngitis. Hears voice 1 foot L., not at all R. Edelmunn whistle, R. 11,048-30 DV., L. 24,802-62 DV. Bone-conduction R. — 30", L. — 22". Rime double neg. both. By air could perceive — R. C, C¹ C² L. 1C¹ to C⁴. No tinnitus or vertigo. Speech natural.

V. G. H —, born February 28, 1894. No history obtainable, except that eyes were attacked first. No family history obtainable. Teeth typical. Old interstitial keratitis. R. Mt. anterior perforation, discharge. L. Mt. thickened and indrawn, malleus fixed. Septum deflected to L., L. inferior turbinal large. R. tonsil enlarged, palate and pharynx scarred. Totally deaf to voice and Edelmunn whistle. Bone-conduction R. — 32", L. — 20". Perceives C³ by air on both sides. No tinnitus or vertigo. Speech natural.

VI. J. L —, born August 12, 1897. Deaf at ten years. Eyes attacked first. The only one alive out of four; others died in infancy. Teeth normal. Old interstitial keratitis and iritis. R. Mt. slightly thickened, L. Mt. normal, mallei mobile. Septum deflected to R. Adenoids were removed at ten years of age. Tonsils slightly large; hypertrophic pharyngitis. Voice heard 6 inches L., not at all R. Bone-conduction R. — 20", L. — 16", but probably greater loss both, Edelmunn whistle? Rime, double neg. both. No air-perception R., but perceives C to C⁴ L. No tinnitus or vertigo. Speech natural.

VII. C. W. P —, born April 25, 1897. Deaf at nine years. Eyes attacked first. Mother has "cataract." Of eight children three are alive; four were still-

born; one lived four weeks. Eldest son (aged twenty) at Darenth Asylum. Teeth typical. Old interstitial keratitis and iritis. Both Mt. slightly thickened, mallei mobile. Nose and throat *nil*. Voice heard, R. 3 ft., L. 6 inches. Weber, R. pos., Rinne, R. pos., L. double neg. Bone-conduction R. = 27", L. ? Edelmann whistle, R. 6960 DV., L. 12,000 DV. By air, R. perceives C64 to C⁴, L. C² to C⁴. No tinnitus or vertigo. Speech natural.

VIII. J. S —, born June 13, 1895. Deaf at fourteen years. Broke arm in June, 1909, and re-broke it when just healed; "deaf since." Eyes attacked "much earlier." Mother dead. Eight children, four alive. Teeth typical. Old interstitial keratitis, active corneal ulceration R. R. Mt. indrawn, L. Mt. inferior perforation, discharge. Nose and throat *nil*. Hears loud voice 2 inches R., not at all L. Edelmann whistle, R. *nil*, L. 20,854-82 DV. Bone-conduction, diminished both, but estimation unreliable. Rinne, double neg. both. By air, R. perceives C and C², L. C to C⁴. No tinnitus or vertigo. Speech natural.

IX. P. S —, born January 14, 1895. Deaf at nine years. Eyes attacked first. Father dead. Four children, all living. Teeth typical. Old interstitial keratitis and iritis. Both Mt. thickened, mallei fixed. Nose and throat *nil*. Has loud vowel hearing R., L. *nil*. Weber, R. pos. Rinne, double neg. both. Edelmann whistle, R. 5524-15 DV., L. *nil*. Bone-conduction R. = 15", L. = 29". By air, R. perceives C to C⁴, L. *nil*. No tinnitus or vertigo. Rests of speech.

GIRLS.

X. C. L. B —, born December 3, 1898. Deaf nine years. Eyes attacked at six to seven years. Mother appears healthy. Four children, no miscarriages: (i) boy, died at five months of "inflammation of bowels"; (ii) patient; (iii) girl, aged nine, "healthy"; (iv) girl, aged six, "healthy." Teeth typical. Old interstitial keratitis. Vision = $\frac{6}{30}$. Both Mt. thickened, mallei mobile. Nose *nil*. Tonsils slightly enlarged. Hears voice 3 inches L., not at all R. Weber, L. pos., Rinne, both pos. Bone-conduction R. = 32", L. = 25". Edelmann whistle, R. 12,401-3 DV., L. 17,000 DV. By air, both perceive 2C32 to C⁴. No tinnitus, no vertigo. Speech natural. Pilocarpin treatment was tried at the Royal Ear Hospital in this case, without result.

XI. B. H. B —, born October 21, 1896. Deaf at ten years. Onset of eye symptoms doubtful. Father and father's mother deaf. Twenty-two children; only five alive. Teeth typical. Old interstitial keratitis, iridectomy R. Both Mt. thickened and indrawn, mallei mobile. Nose and throat *nil*. Hears voice close to R., L. *nil*. Rinne, double neg. both. Bone-conduction R. = 21", L. = 31". Edelmann whistle, R. 11,048-31 DV., L. *nil*. By air, R. perceives C to C⁴, L. perceives C³ only. No tinnitus or vertigo. Speech natural.

XII. F. C —, born April 26, 1895. Eyes attacked in 1902. Deafness began when she left eye hospital. Hearing lost by 1904. Father invalided from Army. Four children, of whom patient is only one living. Teeth normal. Corneae very dense. Pupils occluded and excluded. Perception of light only. R. Mt. dense fleshy-looking, and immobile; L. Mt. thickened, mallei fixed. Nose *nil*. Tonsils slightly enlarged. No hearing, even by bone-conduction, can be elicited. No tinnitus, no vertigo. Some rests of speech, but much has been lost.

XIII. A. L —, born July 10, 1899. Deaf at nine years. Onset of eye symptoms doubtful. No family history obtainable. Teeth suspicious. Old interstitial keratitis and iritis. Both Mt. indrawn, mallei mobile. Nose and throat *nil*. Can hear voice close to R., L. *nil*. Other tests quite unreliable. No tinnitus or vertigo. Speech natural.

XIV. E. M. S—, born May 10, 1894. Deaf at ten years. Onset of eye symptoms doubtful. An only child. Mother "deaf as a child." Father deaf. Teeth typical. Old interstitial keratitis and iritis. Posterior synechiae R. and L. Progressive optic atrophy. Vision = $\frac{2}{3}$. Both Mt. indrawn, mallei mobile. Nose and throat *nil*. Voice heard 2 inches L., R. *nil*. Edelmann whistle, L. 552±15 DV., R. *nil*. Bone-conduction L. — 40", R. > — 30". By air, L. perceives C¹ to C⁴; R. has bare perception for C¹ and C⁴. No tinnitus or vertigo. Speech natural.

XV. E. S—, born June 21, 1896. Deaf at eight years. Eyes attacked one year later. Father dead, mother a prostitute; two children, one dead. Teeth normal. Corneal opacities from old interstitial keratitis, posterior synechiae R. and L., choroidal changes, vision = $\frac{6}{25}$. Supernumerary auricle R., R. Mt. dull and indrawn, L. Mt. atrophic and indrawn, mallei mobile. Nose *nil*. Tonsils enlarged. Hears bell at 4 ft. both, voice *nil* both. Edelmann whistle *nil* both. Bone-conduction R. — 20", L. — 31". By air perceives 1C64, C, C¹, and C⁴ R, 1C64 and C⁴ L. Tinnitus "like music." No vertigo. Speech natural.

XVI. D. T—, born May 5, 1895. Deaf at nine years. Eyes attacked at eight years. No family history obtainable. Teeth normal. Old interstitial keratitis, vision = $\frac{6}{6}$. Both Mt. thickened and indrawn, mallei mobile. Adenoids removed at eight years. Fauces scarred. Hears raised voice 4 inches R., L. *nil*, cannot hear bell L. Edelmann whistle, R. 6960 DV., L. *nil*. Weber R. pos., Rinne double neg. both. Bone-conduction R. — 27", L. — 38". By air R. perceives C² and C³, L. *nil*. No tinnitus or vertigo. Speech natural.

XVII. E. W—, born December 19, 1894. Deaf at nine years. Onset of eye symptoms doubtful. Family history unreliable. Mother deaf. Seven children, five alive. All but patient said to be "healthy." Teeth typical. Old interstitial keratitis; too blind to lip-read. R. Mt. thickened and indrawn, mobility of malleus impaired. L. Mt. thickened and indrawn, malleus mobile. Scars at root of nose; nasal bones absent. Interior of nose disorganised and crusting, septum destroyed; sites of middle and inferior turbinates marked by slight, thickened ridges. Uvula destroyed, and soft palate much scarred. R. posterior faucial pillar adherent to salpingo-pharyngeal fold. Totally deaf, only some bone-conduction remaining (R. — 44", L. — 42"). No tinnitus or vertigo. Rests of speech. Scars at oral angles.

Before going further it will be as well to ascertain what other observers have to say upon the subject. This has been, as I have already indicated, but little.

Hahn (1) has said that congenital syphilis may cause deaf-mutism, either by closure of the Eustachian tubes or by directly attacking the middle ear, labyrinth or auditory centre. When the middle ear is selected, the entire organ of hearing may be destroyed by purulent processes if treatment is not vigorously carried out; when the part affected is the labyrinth or auditory centre, no lesion is discoverable during life.

No doubt the fact that the ears are not usually attacked before the age of eight years, that is, after the acquisition of speech, accounts for its rarely figuring as a cause of deaf-mutism, although one would expect to find it in an appreciable percentage of deaf-mute cases. Mygind (2) has described cases of deafness due to the

condition as early as the age of four years, and considers that it may be a very definite factor in deaf-mutism, but remarks (3) that the fact that congenital syphilis may cause deafness without other specific stigmata, and that the extreme difficulty of discovering syphilis in the parents, especially by means of questions alone, may explain why the disease so seldom appears in deaf-mute statistics; indeed, he says that it is represented by "only a fraction or not at all."

Kerr Love (4), on the contrary, thinks it cannot be expected that syphilis will figure largely in returns furnished through the medium of institutions. He mentions that, at the Glasgow Institution, out of 127 children, only three cases of typically Hutchinsonian teeth could be found. In speaking of 110 acquired cases he mentions two (1·8 per cent.) as due to syphilis. He admits (5) that *post-mortem* evidence of the effects of syphilis in producing deaf-mutism is not wanting, but that the true cause of the deafness is seldom given in such cases.

Moos and Steinbrügge (6) have given the results of the autopsies of three deaf-mutes, the changes in whose temporal bones correspond to the pathological findings, which resemble those met with in the tertiary form of the acquired disease.

More recently Castex (7), in describing his researches into the causation of deaf-mutism in the Paris institutions, has mentioned only eighteen cases out of 719 (2·5 per cent.).

The above comprises all I have been able to find in the literature of congenital syphilis relating to deaf-mutism.

The seventeen cases described above as occurring in 500 deaf-mutes gives a percentage of 3·04, or taking the acquired cases only, of 7·5. This is a much higher figure than that given by Kerr Love. In dealing with this condition it must be insisted that it can only be taken in connection with acquired deaf-mutism, for practically nothing is known as to the effect of syphilis upon the ears *in utero*, although it is very possible that a certain number of the cases which are described as "born deaf" may owe their condition to that disease. The researches of Baratonx, who examined a number of new-born syphilitic infants and found numerous alterations in the ears (chiefly purulent middle-ear inflammations, thickening of the tympanic membrane, adhesions of the membrane to the promontory, hyperæmia, hæmorrhages, and accumulations of pus in the labyrinth, and destruction of the organ of Corti), support this suggestion.

I propose to examine the seventeen cases as to the age of onset

family history, teeth, eye condition, condition of ears, nose and throat, hearing, speech, tinnitus, and vertigo.

Age of Onset.—The age at which deafness appeared varied between six and fourteen years, and was not ascertainable in two. At six, seven, eight, and fourteen, one case each; at nine, seven cases; at ten, four cases. The condition is one which usually attacks the ears between the ages of eight and twenty-five years, but I have met with instances as early as four years, and with one interesting case in which it did not appear until fifty.

Family History.—The family histories in these cases were very difficult to obtain; indeed, in five, or 29·4 per cent., there were no particulars whatever. The parents of such cases are adepts at concealment, and usually fill in the official sheets under "Cause" as "unknown," "fall," "blow," "nerve," "consumption." Some of the children, too, came from homes or institutions, where nothing is known of the parents. One case was illegitimate, and one was the only surviving child of a prostitute. Another was the only survivor of the four children of a man invalided from the Army. In only two cases (VII and X), or 11·7 per cent., were satisfactory particulars obtained, and both these family histories were fairly typical.

Teeth.—The teeth were of the typical Hutchinson type in ten (58·8 per cent.) and of these, the first molars were carious in three. Of the remaining cases, one had teeth which were suspicious, but not well marked, and six had teeth which were free from any specific sign; none of these seven showed any caries of the first molars.

Eyes.—In nine cases, or 52·9 per cent., it was definitely ascertained that the eye symptoms appeared first, and in only one case (5·8 per cent.) were they preceded by the deafness. The remaining seven were doubtful. In only four instances could the date of the eye symptoms be definitely ascertained, and in three of these (X, XII, XVI), they were antecedent to the deafness by two to three years, a few weeks, and one year respectively. In the fourth case (XV) they did not appear until one year after the child had begun to grow deaf. In Case XII the girl was for some months an inmate of an ophthalmic hospital, where she was under active anti-syphilitic treatment, in spite of which the ears were attacked whilst in hospital, and progressed so steadily that she was stone deaf within two years.

So far as my own observations go (9), the eye symptoms usually precede the aural condition closely, but there may be a con-

siderable interval of time between them, and although the ocular disease may come after the deafness, it is much less common for it to do so. Thus, in thirty-two cases under my observation, the eyes were attacked first in fourteen, at the same time as the ears in six, and after the ears in only four, the relation being doubtful in eight.

The eye conditions met with in the seventeen cases under discussion were sufficiently serious in ten (five boys and five girls), or 58.8 per cent., to require their transference to Homerton Residential Deaf Centre, in order that they might have special instruction. Every case showed interstitial keratitis or its results, five had old iritis, three had posterior synechiae, one had had iridectomy performed, two showed choroidal changes, and one had progressive optic atrophy.¹ Nothing shows the ravages of congenital syphilis in a more terrible light than do these cases, and the acquired deaf-mute who owes his condition to this cause is in a far more terrible plight than any other class of normal deaf-mute. I would allude particularly to Cases XII and XVII. The first of these, a bright and very intelligent girl, is stone deaf and has both corneae of a dense and almost horny character, with both pupils occluded and excluded, and her vision reduced to bare perception of light. She has been taught Braille, but can only converse by means of words spelt upon her own fingers by others. Her work with the stocking machine, in the manipulation of which she is an adept, is remarkable. The second case, who is too blind to learn lip-reading, I shall have occasion to allude to later. Case XV, with posterior synechiae on both sides and progressive optic atrophy, is another instance of too great visual defect to allow of success in lip-reading.

(To be concluded.)

DEATH OF AN EMINENT OTOLOGIST.

OUR readers will hear with regret of the death of Prof. Zaufal, of Prague, which took place on February 8 of the present year, in the seventy-third year of his life. His valuable contributions to otology are well known, and he is probably the originator of the idea of ligaturing the internal jugular vein in cases of phlebitis of the lateral sinus.

These particulars are from the notes of Dr. Bishop Harman, Ophthalmologist to the L.C.C. Education Department.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Meeting on March 4, 1910.

DR. DUNDAS GRANT, *President, in the Chair.*

The following cases and specimens were shown :

PAPILLOMA OF THE LARYNX, WITH SYMMETRICAL PAPILLOMATA ON THE PALATE.

BY DR. ANDREW WYLIE.

THE patient, a male, aged forty, a cabdriver, complained of hoarseness, and at times dyspnoea. The hoarseness began eight months ago, gradually becoming worse, and latterly attacks of dyspnoea caused distress upon lying down. There was no dysphagia and no loss of weight. Upon examination a large subglottic papilloma in the anterior commissure of the larynx and two papillomatous growths on the edge of the soft palate, equal distances from the uvula, could be seen. The exhibitor considered this a suitable case for the demonstration of the symmetry of the papillomata on the soft palate, and for the proof of their contagious nature. The case was first seen two weeks ago, and it was intended to remove the laryngeal papilloma by means of the direct method, which was especially applicable for growths in this region.

DR. JOHNSON HORNE thought the case interesting, but was not sure in what respect it afforded proof of the contagious nature of papillomata.

DR. WYLIE admitted that the contagious character of papillomata was a disputed point. In this case, however, the occurrence of the growths on those parts of the soft palate which rubbed against each other in phonating, etc., was suggestive.

PAPILLOMATA OF LARYNX FROM BOY, AGED SIX, REMOVED BY DIRECT METHOD.

BY MR. HERBERT TILLEY.

The patient had been operated on four times previously, but the growths rapidly recurred. For several months he had worn a tracheotomy tube, and the granulations around this had become

transformed into a hard, warty mass the size of a half-walnut. There was also a papillomatous growth on the posterior pharyngeal wall opposite the tip of the epiglottis. Suggestions for treatment were invited.

Dr. WATSON WILLIAMS asked the President if his experience had confirmed his recommendation of salicylic acid in alcohol as an application for laryngeal papilloma.

Dr. JOHNSON HORNE said that twelve months ago he had had a child under his care with papilloma of the larynx. After a tube had been worn for some time thyrotomy was performed, the growths removed, the cautery applied, and an intubation tube inserted. So far the result had been successful.

Dr. STCLAIR THOMSON, remarking that the growths in this case had been removed four times, advised Dr. Tilley to continue removing the growths as often as they recurred. He reminded the Section of a case he himself had shown, in which the patient had had chloroform some sixteen times in order to clear out the larynx. That patient was now speaking quite well and the tube has been removed.

Mr. MARK HOVELL associated himself with the last speaker in his recommendation to persevere with efforts at removal. This was the plan he had followed at Golden Square, and always with ultimate success.

Dr. FITZGERALD POWELL thought, on the other hand, that papillomata when left alone often stopped growing.

The PRESIDENT said he had had under care a girl, aged twenty, who had worn a tube from her fourth year. Her larynx was the seat of very large papillomatous growths, which had not disappeared in spite of her having worn a tracheotomy tube for sixteen years. He (Dr. Grant) removed the growths and closed the tracheotomy fistula. A similar case, with equal lack of result from tracheotomy alone, was seen by Dr. Hunter Mackenzie, of Edinburgh, with similar persistence of the growths. Still, tracheotomy should be tried before thyrotomy was done. He had used salicylic acid for only small growths; he did not think anyone would be so sanguine as to expect it to have effect on huge warty growths. Recurrences after mechanical removal could be treated with salicylic acid, or the more modern ionisation might be thought of.

A MEMBER, having asked whether it was true that Dr. D. R. Paterson got such cases at Cardiff by the dozen—

Dr. D. R. PATERSON replied that laryngeal papillomata were common in Cardiff, but not exactly "by the dozen." Experience had taught him that they could only be cured by repeated removal. He also recommended regular courses of arsenic—a method of treatment first suggested by Körner, of Rostock.

Mr. H. TILLEY, in reply, said that he had already operated at least four times on the boy, and that he intended to continue his efforts. On his first visit to hospital the boy was very dyspnoëic, and as it was assumed that he was suffering from diphtheria he was admitted at once into the diphtheria ward and tracheotomised. Twenty-four hours later it was seen that he was not suffering from diphtheria, and he came under the speaker's care. He was then examined by the old Killian method, and the growths were removed with Paterson's forceps, and salicylic acid in alcohol, gr. xx to 3j, rubbed in. Arsenic was also given for several weeks. The boy then disappeared, wearing his tube, and returned several times with recurrences, which were also removed, the last time in enormous

quantity. He was not sure how long the tracheotomy tube should be worn; at the present time the growths formed cauliflower masses from end to end of the larynx and extended down to the tracheotomy wound, growing even out on to the granulations of the wound. He remembered Dr. StClair Thomson's case of multiple operations. He intended to ask Dr. Bashford to see the case, as it seemed to illustrate local infection.

REMOVAL OF A RAPIDLY GROWING SOFT FIBROMA FROM POSTERIOR WALL OF LEFT MAXILLARY ANTRUM BY ROUGE'S OPERATION.

By MR. HERBERT TILLEY.

H. B.—, aged forty-eight, complained of left nasal obstruction, increasing for twelve months. During the past six months frequent nose-bleeding on that side, with discharges of glairy mucus. Examination showed posterior half of left nasal cavity completely filled by a dark red, very soft, and easy-bleeding mass of growth. Operation: Laryngotomy, plugging lower pharynx; incision under lip from right canine fossa to left malar process; division of anterior half of nasal septum from its lower attachment; turning up of soft parts; removal of left canine fossa and ascending process of superior maxillary; removal of growth and final replacement of soft parts, secured by a few interrupted sutures.

Specimen, with sections, shown.

Dr. WATSON WILLIAMS, who had seen the case shortly after the operation, had been struck with the rapidity of recovery after the operation, and yet the growth had been efficiently removed. This method without doubt provided a good access.

Mr. ROSE asked Mr. Tilley if he had been able to make out the exact site of attachment of the growth in the antrum or outer nasal wall. He asked that the specimen might be handed to the Morbid Growths Committee.

Dr. STCLAIR THOMSON said that this operation was really Denker's modification of Rouge's procedure, because the ascending process of the superior maxilla had been removed so as to enter the antrum. The case was a successful one, further, in that the septum, though detached, had not been injured. Rhinologists should press this operation on general surgeons. If the growth lay higher in the nose Moutre's incision might be adopted. Mr. Burghard, with whom he had recently discussed these cases, agreed with his views. As a rule such growths sprang from the antro-nasal region of the ethmoid.

Dr. WILLIAM HILL was not altogether in favour of this operation. He reminded the Section that Rouge's operation had been invented for syphilis of the nose in order to clear out the necrosed bone. He had seen a case of this kind with a perforated septum, in which the operation had been performed, with the result that the blood-supply to the hard palate by the naso-palatine artery had been cut off and the palate had necrosed.

The PRESIDENT said he assumed it would have been impossible to

remove the growth by way of the canine fossa alone, and he asked whether there was a large orifice leading from the antrum into the nose.

Mr. CHICHELE Nourse asked how long it was since the operation had been performed. He was much impressed by the good result. In all those operations the great point was the removal of the ascending process so as to have free access to the parts. He would prefer this method to that of external incision in all his future cases.

Mr. H. TILLEY replied that it was difficult to say where the growth was attached because the hæmorrhage was very free. It seemed to be growing about the junction of the posterior wall of the antrum in the ethmoidal region, but, in lifting up the tumour in order to define its attachment, it had broken away. It was most important to cut through the septum in order to raise the soft parts, and another point of importance was that tracheotomy had to be performed, because, if the mouth was gagged open to administer the anæsthetic, then the soft parts were stretched and could not be turned up. Referring to Dr. Hill's experience, he doubted whether cutting through the septum would deprive the hard palate of its blood-supply. The occurrence of necrosis of the palate in a case of syphilis might have been due to the disease, and not to the operation.

CHRONIC FRONTAL SINUS EMPYEMA WITH EXTERNAL FISTULA, CURED
BY REMOVAL OF MIDDLE TURBINAL AND IRRIGATION. ANTRAL
EMPYEMA ALSO OPERATED ON AT SAME TIME.

BY Mr. HERBERT TILLEY.

E. T——, aged seventy-one, was sent for treatment of a suppurating sinus under the inner end of left eyebrow. Frontal sinus and antral empyemata were easily diagnosed, but, owing to the patient's age and fragile condition, it was determined to drain freely the antrum (Caldwell-Lue operation), and to do the same for the frontal sinus by making free intra-nasal drainage, followed by irrigation. There had been no discharge from the fistula since the operation, and its opening had very much retracted and contracted.

FACE AND MOUTH OF A FEMALE INFANT.

BY Dr. ALEX. R. TWEEDIE.

The specimen was taken from a "wasting" child which was brought to the Nottingham Children's Hospital in October, 1909, as the parents found they were unable to feed it properly on account of a deformity in connection with the mouth. The child was then eleven days old. An operation was suggested, but before it could be admitted for such treatment it died in a marasmic condition, aged three months. There was a complete congenital

cleft of the whole soft palate, the left half of which lay in the position usually seen in such circumstances, but the right half was continuous with a membranous structure, which, commencing opposite the posterior border of the hard palate, was attached continuously to the inner side of the right cheek and extended downwards and forwards to the floor of the mouth, where it terminated in front of the right side of the tip of the tongue. The specimen was shown as constituting a possible instance of the persistence on the right side of the lower half of the septum between the primitive stomodæum and foregut (with which the right side of the soft palate has become incorporated), which in its upper portion was sometimes represented by the condition known as congenital atresia of the posterior choanæ.

Dr. D. R. PATERSON thought that the palate had become attached to the tongue. He could not agree with Mr. Tweedie's explanation, but, as their controversy on this point had already been published, he did not enter into it fully again.

Mr. A. R. TWEEDIE said his explanation was only a suggestion to account for an unusual deformity. He did not consider that the palate was fused with the tongue, because the tongue could be moved quite freely.

Dr. H. J. DAVIS commented upon the difficulty of obtaining a specimen of this kind.

A CASE OF "BLEEDING POLYPUS" OF THE INFERIOR TURBinate.

By MR. SOMERVILLE HASTINGS.

On November 8, 1909, a brass-finisher, aged forty-two, came to the Middlesex Hospital complaining of epistaxis of a month's duration. Every time he blew his nose he was troubled by bleeding from the right nostril, which lasted about a quarter of an hour. The bleeding was not severe, and never came on spontaneously. When the nose was examined a pedunculated growth about the size of a pea was seen growing from the right inferior turbinate not far from its anterior extremity. The tumour was purple in colour and nodular on the surface. It did not appear ulcerated, but blood-clot was adhering to it at one point. Except that the mucous membrane on both sides of the nose was deeply congested—a fact easily accounted for by the alcoholic condition of the man—no other abnormality was noted. The small growth was snipped off with a piece of the mucous membrane covering the inferior turbinate bone attached to it. When the patient returned to the hospital on November 21 the little wound had healed and there was no sign of any recurrence of the growth; and on

December 30, in reply to a letter, the man stated that he was quite well.

A median longitudinal section of the tumour showed it to be of the nature of a soft angeio-fibroma. The groundwork of the swelling was composed of a fibrous matrix, in which were embedded numerous oval connective-tissue cells. A layer of squamous epithelium covered the tumour, and at one point both tumour-substance and epithelium covering it were infiltrated with polymorphonuclear leucocytes. No plasma-cells (of Unna) were to be seen, nor were any mucous glands present in the tumour, though abundant in the adjoining mucous membrane. Scattered through the growth were many spaces lined with endothelium. Some of these contained blood; others, which were empty, might be lymphatics.

As could readily be seen, the histological structure of the tumour closely resembled that of the bleeding polypus of the septum, an excellent account of which was to be found in the *Lancet*, November 18 and 25, 1905, by Dr. L. Hemington Pegler. Very few tumours of this structure appeared to have been recorded growing from the inferior turbinate. Krieg ("Atlas of Diseases of the Nose," 1901), mentioned an example which occurred in a woman, aged thirty-one; and Siefert and Kahn, cited by Pegler ("Atlas der Histopathologie der Nase"), had described the histological structure of these growths, and had pointed out that this was quite different from that of mere hypertrophy of the mucous membrane. Schwager, also cited by Pegler ("Archives für Laryngologie und Rhinologie," 1894, p. 105), gave details of six cases and reviewed the literature of the subject.

Dr. L. HEMINGTON PEGLER congratulated the exhibitor on his good fortune in finding the first example in this country of this tumour growing from the inferior turbinal. The slide showed the definition of the neoplasm from the turbinal best when viewed macroscopically. Mr. Furniss Potter and Dr. Kelson had also had cases which showed the starting-point of these angiomatous growths, but so far none of the cases had thrown much light upon the evergreen question of their ætiology—whether they were modified granulomata or new-formed angiomata.

Mr. ROSE was of the opinion that if the term "bleeding polypus" was limited to those growths on the septum, then this was not a tumour of that kind. The specimen now shown was not unlike a vascular moriform inferior turbinal. The doubt he felt was strengthened by the unusual site of the growth.

Dr. PEGLER said that if Mr. ROSE were to examine the twenty specimens of "bleeding polypus" in the cabinet of the Section he would see that they presented great variety in their structure, and he would find several identical with the specimen now being discussed.

The PRESIDENT said that some time ago he was called to see a lady.

aged sixty-three, who had had some obstruction in her right nostril for only a few weeks. She had had spontaneous bleeding, which had been associated with a thick discharge, and her health was suffering. The obstructing body looked like a polypus, with an angry-looking, reddish surface, which bled readily. It caused bulging of the nose below the lower margin of the nasal bone, where there was a boggy area, which was tender on pressure. There were no enlarged glands, but from the appearance of the growth he thought it most probably malignant. He removed it, and it appeared to grow from the upper and anterior part of the inferior turbinated body. Mr. Butlin also saw it and thought it looked malignant. He would bring the section before the Society. The pathologist reported it to be angio-myxomatous in structure.

MR. SOMERVILLE HASTINGS was sure that the tumour was not a moriform turbinal because the turbinal otherwise was quite healthy, and in addition, no mucous glands had been found in the tumour. The specimen corresponded with what was depicted in the books.

LARYNX, FOUR RINGS OF TRACHEA, AND PART OF THYROID GLAND AND GULLET REMOVED DURING AN ACT OF SUICIDE.

BY DR. E. A. PETERS.

This specimen was supplied by Dr. Clark, of Rickmansworth. A painter, aged twenty-nine, subject to hallucinations and depression after bouts of alcoholism, cut his throat when sober at 5 a.m. He made a transverse cut down to the spine and two or three vertical cuts, one of which opened the larynx accurately in the middle line. The suicide seized the obstructing larynx and cut away the adherent gullet and trachea at the fifth ring, and threw the fragment exhibited into the garden; he walked 200 yards, to collapse outside a friend's house, where he was discovered. Dr. Evans, who saw him first, found no bleeding vessels. The two doctors found it impossible to bring the trachea to the skin. Death of lung suffocation followed at 10 a.m.

SINGER'S NODE ON LEFT CORD.

BY DR. E. A. PETERS.

H. S—, aged forty-one, foreman fitter, lost his voice three months ago. It improved somewhat lately, but his voice was still impaired. The small nodule, less than $\frac{1}{8}$ in. in diameter, was white and sessile, of the shape of a split-pea. It was attached to the under-surface and margin of the cord at the juncture of the anterior and middle third. What was the best method of removing the nodule?

Mr. HERBERT TILLEY said that the application to the nodule of the galvano-cautery by the direct method would leave nothing to be desired.

Mr. MARK HOVELL agreed with Mr. Tilley, and advised that the cautery point should be protected with ivory.

Dr. FITZGERALD POWELL thought that the growth looked more like a fibroma than a singer's node. Regarding laryngoscopy, he advocated the indirect to be practised as often as possible lest our hand should lose its cunning.

Mr. HAROLD BARWELL feared that Mr. Peters had set an insidious trap to lead us into a discussion upon the relative merits of direct and indirect laryngoscopy.

Mr. C. HORSFORD would employ the cautery applied by the indirect method, aided by the raising of the epiglottis by means of his epiglottis needle.

Dr. WM. HILL held it to be nothing short of criminal to apply the cautery to the larynx by the indirect method. The direct method enabled one to apply the cautery-point exactly to the desired spot.

The PRESIDENT said he had constantly hesitated to apply the galvano-cautery to those nodules. It was surprising to what extent the cases would recover, even if the nodules were left there.

Dr. W. MILLIGAN agreed with the President, and related a case in support of his opinion. He had applied the cautery to the cord in the treatment of a singer's node, and for a time the effect seemed good. But considerable cicatricial contraction ensued, the cord became bowed, and the voice was seriously interfered with.

Dr. FITZGERALD POWELL considered this a suitable case for galvano-cautery because it was not a singer's node.

Dr. STCLAIR THOMSON said that it was possible to be as accurate in applying the cautery to a cord by the indirect as by the direct method. Von Eicken, at Freiburg, himself removed these growths by the indirect method because it was quicker as well as easier for the patient. The speaker held that this case should not be recorded as a singer's node. The tumour did not occupy the position of these outgrowths, and there was no depression corresponding to it on the other cord.

Dr. A. WYLIE agreed with previous speakers that the exerescence on the cord was not a singer's node. He thought that the application of the cautery would be risky, considering the site of the outgrowth. For that reason he would prefer to remove it with Dr. Grant's forceps.

Mr. E. A. PETERS said, in reply, that he considered the tumour to be a singer's node occurring in a non-singer, in the sense that it was due to attrition of the cords. It was pulled under the cord so that it did not interfere with the voice during phonation. Its removal by the cautery would be easy, especially if the patient were trained to show his larynx. Unlike Dr. Milligan, he had never seen any evil results follow the use of the cautery.

TUBERCULOUS PERICHONDritis OF CRICOID AND ARYTENOID CARTILAGES.

By Mr. HAROLD BARWELL.

The patient, a man, aged sixty-four, was admitted to hospital under the care of Dr. Cyril Ogle, with bronchitis, dilated heart, and anasarca. He had had some difficulty in swallowing for

twelve months, and dyspnœa for four weeks. Syphilis many years ago; no history of tuberculosis. The exhibitor examined him on admission and found marked obstructive dyspnœa. A large, irregular mass occupied the left half of the larynx; the left arytenoid was fixed in the middle line; there was deficient abduction of the right cord, and a rounding swelling at the back of the cricoid plate projecting into the pharynx. It was thought to be a case of malignant disease, and tracheotomy was advised and performed the next day under local anaesthesia. The patient died ten days later from cardiac failure. *Post-mortem*, Dr. Trevor found the cricoid and left arytenoid cartilages exposed and necrotic, but no tuberculous ulceration or infiltration of the superficial parts of the larynx. There was a quiescent fibro-caseous nodule in each lung. Dr. Slater found tubercle bacilli in the sub-perichondrial necrotic tissue, and inoculated a guinea-pig, but the result was not yet to hand.

PERICHONDRITIS OF THYROID CARTILAGE OF UNKNOWN ORIGIN.

BY MR. HAROLD BARWELL.

The patient, a German waiter, aged forty-seven, was admitted on December 31, 1909, under Dr. Collier. Dysphagia began five days before, and attacks of dyspnœa, with stridor, came on three days after admission; there were four such attacks on December 31, before admission. No previous illness; syphilis denied. There was some dyspnœa on that night, but not so serious as to demand tracheotomy, after which the difficulty in breathing ceased and the patient seemed convalescent. On January 7 the exhibitor found swelling of the right aryteno-epiglottidean fold and arytenoid, which was fixed in abduction, and diagnosed perichondritis. After this, though the patient did not complain of dysphagia, he refused food, and on January 11, 1910, died suddenly while asleep. *Post-mortem*, Dr. Trevor found perichondritis of the right ala of the thyroid cartilage, which was bare on its inner aspect. An abscess ramifying between the gullet and the air-passage had ruptured into the pyriform fossa, and the contents had been aspirated during sleep.

MR. HAROLD BARWELL added that the guinea-pig which had been inoculated from the first case, though still alive, had developed an abscess at the site of inoculation and enlarged glands, so that the diagnosis of tubercle was almost certain.

CHRONIC SUPPURATION OF THE LEFT FRONTAL SINUS, WITH DIS-
PLACEMENT OF THE LEFT EYE AND DIPLOPIA; OPERATION;
RECOVERY.

BY MR. CHICHELE NOURSE, F.R.C.S. Edin.

The patient, a man, aged thirty-six, was referred to the author by Mr. de Gruyther in May, 1909, on account of proptosis and displacement outwards and downwards of the left eye, which had come on some days before, and diplopia, which had troubled him for five months. There was also considerable swelling of the frontal region on both sides, particularly the left, and the inner part of the orbit was pushed downwards. No pain had been complained of at any time, there was no marked tenderness, and no fluctuation could be detected. The swelling was clearly due to expansion of the bony walls of the left frontal sinus.

On transillumination both frontal sinusses and both antra were opaque. An X-ray photograph, kindly taken by Dr. Ironside Bruce, showed a marked shadow above the left orbit. Both maxillary antra contained pus.

The patient stated that he had been troubled with a discharge from the left nostril for ten years, and had occasionally noticed subjective fœtor on that side. At the time of examination the left nasal fossa was free from pus, but the middle meatus contained some polypoid tissue of a doubtful appearance. Dr. Wyatt Wingrave's report of a specimen of this material was that it consisted of gland-tissue, infiltrated with large mesoblastic cells of the endothelial type.

The Ogston-Linc operation was performed on May 21. An incision was made through the brow from three quarters of an inch to the right of the middle line to the junction of the outer and middle thirds of the left eye-brow, where it was carried upwards and outwards for a short distance. The bone was rough on the surface and vascular; it bulged considerably, especially over the left frontal sinus. At one spot it was thinned and dark in colour. On making an opening through the bone offensive pus immediately welled up, and on enlarging the opening the exposed lining of the sinus presented as a dark-red, pulsating mass. The cavity contained a large quantity of fœtid pus, enclosed in a vascular and polypoid lining-membrane. The bony wall of the sinus was uneven; at one point in the superior wall the dura was exposed to the extent of a threepenny piece, and at another spot the orbital wall was defective to about a similar extent. The septum was situated a

little to the right of the middle line and was intact. The left frontal sinus measured two and a half inches outwards from the septum. The fronto-nasal canal was large enough to admit the little finger.

The whole contents of the sinus, including the lining, were removed, and solution of zinc chloride applied to the walls. A drainage-tube, sufficiently large to fit tightly, was then passed down the infundibulum and left projecting from the nostril; it was left in place for fourteen days. The cavity was lightly packed with gauze for twenty-four hours, and the wound closed with sutures, except at the inner end. For two days there was oedema of the forehead and upper eyelid, but no further trouble occurred. The wound had completely healed in ten days, but reopened again in the middle line some weeks later and did not finally close until November 19. The diplopia disappeared sixteen days after the operation, though the left eye remained on a distinctly lower level for some weeks.

The patient was now well with the exception of the remains of suppuration, not yet quite cured, in both maxillary antra. Dr. Wyatt Wingrave reported that the pus from the frontal sinus was swarming with small Gram-negative diplococci, and also contained clumps of *Bacillus pyocyaneus fetidus*.

Mr. Nourse, in reply to a question, said that the proptosis was due to distension of the bony wall of the sinus.

A CASE OF TUBERCULOUS DISEASE OF THE EPIGLOTTIS.

By Dr. Kelson.

Man, aged thirty-six, commercial traveller. No history of syphilis. Mother died of phthisis. For four months had complained of cough and pain on swallowing. No tubercle bacilli were found in the very scanty sputum, but crepitations could be heard at both apices. Epiglottis presented a curiously distorted and ulcerated appearance.

COMPLETE INSPIRATORY STENOSIS OF THE LARYNX IN A MAN; CASE FOR DIAGNOSIS.

By Dr. StClair Thomson.

The man had been invalided from the Army in India on account of present condition. He stated that twelve months ago his voice began to go, and the Army report showed that he had an ulcerated patch below the right vocal cord. He was admitted

to hospital in India on February 11, 1909, with almost complete aphonia. No tubercle bacilli were found, and he was treated with Hg and KI, with no improvement. On August 6 he suddenly became cyanosed, and tracheotomy had to be performed. Admitted to King's College Hospital a few weeks ago, it was seen that a laryngotomy, and not a tracheotomy, had been carried out. He was wearing a small-sized tracheotomy-tube. There was no inspiration through the glottis, but there was enough expiration to enable him to talk in a rough whisper. The larynx was occluded by smooth, red swelling of both ventricular bands, so that they were in complete apposition. There was no ulceration, but on phonation a fleeting glance of some greyish mass was obtained in the region of the cords. The larynx was generally bathed in pus; from the outside it was felt to be enlarged, but freely movable. At first there was marked tenderness on the left side. There was no history of syphilis, but there was a scar on the penis. The family history was good. The patient lost 2 st. in weight, but of this he had recovered 9 lb. The sputum and discharge had been examined for tubercle bacilli, with negative result. There were no physical signs in the chest. The temperature was normal. The Wassermann and von Pirquet reactions were negative. There were no enlarged glands. The patient swallowed easily, and appeared in fair health and good spirits. He had been examined by the Röntgen rays, but no metallic foreign body was disclosed. Examination by direct laryngoscopy did not reveal anything. The first step in treatment was to perform a genuine median tracheotomy. It was interesting to compare the situation of the cannula at present with the scar of where it was before. Patient had been put on innuents without decided improvement. The case was evidently not one of malignant disease or tubercle. There was, doubtless, perichondritis going on. The probability was that after all the condition was syphilitic, or due to some foreign body impacted in the ventricles of the larynx. Opinions were invited.

Dr. D. R. PATERSON had recently seen a case very similar to this in a collier. The affection ran very much the same course. During a suffocative attack a laryngotomy had been performed in the first instance and more lately a low tracheotomy. Since then there had been some improvement, and the swelling, after several comings and goings, had slowly undergone some improvement, and the patient was now able to expire through the larynx to some extent. He thought therefore that expectant treatment would also be best for the case under discussion. In his own case the aetiology of the complaint was equally obscure; there was no sign of syphilis or foreign body.

Dr. MILLIGAN advised Dr. StClair Thomson to secure some of the pus in the larynx by means of a long pipette, so that a vaccine might be made, for the trouble might be due to a local infection.

Dr. H. TILLEY drew attention to the fact that while a greyish mass could be seen on indirect examination, yet nothing was discoverable by the direct method.

Dr. FITZGERALD POWELL thought that the case would prove to be syphilitic. The greyish mass might be a piece of necrosed cartilage. He asked whether the larynx was examined when the tracheotomy was performed. After the acute phase had quietened down syphilitic stenosis might follow, and in that event, as he had found in a case of his own, the removal of half the larynx would be followed by a good result. He asked why the exhibitor made mention of a foreign body in the larynx.

Dr. STCLAIR THOMSON replied that he had mentioned foreign body because a case had been shown to the Society some time ago by Mr. Lake, the appearances of which puzzled everybody, and in that case it turned out that a spicule of bone was responsible for the lesion. He thought he would adopt Dr. Milligan's suggestion of having a vaccine made. He agreed that the larynx should have been examined when the tracheotomy was done. The direct method in this case really showed less than the indirect. There was evidently perichondritis present, and he had half hoped that someone would have suggested the performance of laryngo-fissure.

MAN, AGED TWENTY-ONE, WITH UNILATERAL PAN-SINUSITIS. SIX WEEKS AFTER OPERATION, WHEN ALL FOUR CAVITIES WERE OPERATED ON AT ONE SITTING.

By Dr. STCLAIR THOMSON.

It was intended to exhibit this patient at the last meeting—a fortnight after operation—to show how speedy is the recovery in a successful case. Slight temporary indisposition prevented this. A radiograph showed how extensive was the orbito-ethmoidal cell in this case. It extended far back in the roof of the orbit, resembling very much the one in the dried skull exhibited at the same time. With the exception of a little crust in the ethmoid region all suppuration had ceased. Before the operation was undertaken, the frontal sinus was washed out on several occasions and the antrum was punctured and washed out three times. No relief followed, and the patient asked for the radical operation on account of the persistent headache. This had quite disappeared. There was no diplopia.

CAST OF UPPER JAW FROM A CASE OF CONGENITAL OCCLUSION OF THE POSTERIOR NARIS.

By Dr. D. R. PATERSON.

The patient, a woman, aged forty-one, did not complain of difficulty

in breathing until two years ago. The right nasal cavity, after being emptied of mucus, was seen to be completely closed posteriorly, an excellent view being obtained, as there was no septal deviation to interfere. The nasal floor on the right side was apparently lower than the left. There was no asymmetry of the face and no appreciable difference noted on inspection in the two halves of the upper jaw, but the cast showed the right half to be actually narrower and the arch of the palate slightly higher on that side.

Mr. ROSE asked what the hearing-power was like on the obstructed side.

Mr. CLAYTON FOX asked if there was any mental deficiency in the case.

Dr. D. R. PATERSON replied that there was no impairment of hearing on the affected side. The inner end of the Eustachian tube encroached very considerably upon the new lumen. There was no mental deficiency, but the other nostril had served so well that the abnormality had not been observed, or complained of, by the patient.

ATRESIA OF THE UPPER NARIS.

By Mr. NORMAN PATTERSON.

Female, aged twenty-three. The right anterior nares was closed by a union between the skin covering the anterior part of the nasal septum and that lining the ala. At the upper part of the union there was a small pocket into which a probe could be passed for about $\frac{1}{4}$ in. The tip of the nose was slightly deflected to the left. The cartilaginous septum was markedly bulged over to the right. The lateral incisors were rotated, their anterior surfaces looking forwards and inwards. The palate was not unusually high. There was nothing of note in the post-nasal space. Vague history of an injury to the nose caused by a swing accident when a child. Opinions were solicited as regards the best form of treatment.

Mr. CLAYTON FOX regarded the closure as due to a cicatricial web, the result of congenital syphilitic ulceration. The incision teeth were not typically notched, perhaps, but the canines were peg-shaped, and the molars domed. The web was too thick and well-formed to be a developmental deformity, and there were, moreover, cicatrices upon it.

Dr. H. J. DAVIS had observed some white scars on separating the nostrils.

Mr. H. TILLEY said that when the patient blew air into the affected side of the nose the web was forced down. He believed that if the web were perforated, and the cartilage of the septum removed, the result would be a perfect nostril.

Dr. H. PEGLER remarked that the patient seemed to have no recollection of any event in her past history which could throw any light upon the abnormality.

Dr. PATTERSON, in reply, agreed that the cause might be congenital syphilis. On the other hand, it might be developmental, because Dr. Keith had informed him that from the third to the seventh month of fetal life the nostrils were closed by epithelium, and this might have persisted. With regard to treatment, he agreed with Mr. Tilley.

CASE OF ASTHMA. IMPROVEMENT AFTER NASAL TREATMENT.

BY DR. DAN MCKENZIE.

The patient, a male, aged thirty-four, had suffered from asthma since childhood. Both middle turbinals, which were enlarged—the right being polypoid and cellular—were snared in September and October, 1907. The septum was resected under cocaine in February, 1908. He stated that he had not had a paroxysm now for seven months.

Mr. SCANES SPICER said that nasal operations were nowadays, since the septal operation had become popular, more frequently successful in relieving and curing asthma than they had formerly been. He himself had had a case in which the removal of the turbinals and the opening of the ethmoidal and sphenoidal cells had cured asthma so completely that the patient had even passed through an attack of bronchitis without a recurrence of asthmatical breathing. In these cases our aim, so far as the nose was concerned, should be thoroughness, all possible pressure being removed.

Dr. H. PEGLER said that ten years ago the nasal treatment of asthma was as thorough as it was now. The case before them was on all fours with many other cases in which asthma was removed by measures much less heroic, such as the application of the cautery to the septum.

Mr. CLAYTON FOX asked whether adrenalin or vaso-constrictine was tried before the nose was operated on. He had found that if these remedies relieved the breathing, then the galvano-cautery applied to the septum was likely to be useful.

Dr. H. J. DAVIS said that adrenalin in asthma was most likely to be of service if injected hypodermically. If polypi were present the asthma could only be relieved by thorough removal of the growths. There was no doubt that simple cases were often relieved for two or three years by a gentle cauterising of the tubercle of the septum; too much scarring should be avoided.

Dr. A. BRONNER agreed that cauterising relieved many cases.

The PRESIDENT desired to congratulate Dr. McKenzie on the patient's freedom from attack for seven months. He hoped more would be heard of the case. Many members would have had cases in which they were disappointed by recurrence, even after months of freedom. Others had got well after even less operative activity than Dr. McKenzie had practised in the present instance. But the time had passed when anyone could deprecate the idea of treating asthma by means of operations on the nose. The Laryngological Society, some years ago, appeared to have expressed an opinion unfavourable to the treatment now being discussed. Since that date there had been the scientific investigations of Dixon, as well as Francis's clinical observations, and though Francis's

results were not found in every case, all must have had cases which answered to the treatment. Possibly the subject would come up again.

Dr. DAN McKENZIE said that the nose had only been operated upon because it presented abnormalities, and the success of the treatment had certainly exceeded his expectations. He had not tried adrenalin before operating.

CARCINOMA OF GULLET IN A MAN, AGED SIXTY-TWO. DEMONSTRATION OF RADIUM APPARATUS AND ITS INSERTION IN GULLET BY MEANS OF A SPECIAL OESOPHAGEAL TUBE DESIGNED BY EXHIBITOR.

By Dr. WM. HILL.

SKIAGRAMS OF CASES OF CARCINOMA OF GULLET, WITH RADIUM TUBES IN THE VARIOUS THICKNESSES OF SCREENS PHOTOGRAPHED IN SITU.

By Dr. WM. HILL.

The case was one of squamous epithelioma, and he asked whether it was likely to prove amenable to treatment by radium.

Dr. FINZI referred to some points in the radium treatment of carcinoma of the gullet. In this case it would be easy to get the radium to it, but it was doubtful whether it would do any good, because being squamous epithelioma the chances were not so favourable. At the same time it was worth trying.

TRAUMATIC CICATRICIAL STENOSIS OF LARYNX IN A CHILD, AGED SIX, UNDER TREATMENT BY A RUBBER INTUBATION TUBE.

By Dr. WM. HILL.

A CASE OF OESOPHAGEAL STENOSIS IN A MAN, AGED FIFTY-THREE.

By Dr. SCANES-SPICER.

Symptoms of dysphagia of three months' duration. Demonstration with Brüning's œsophagoscope. Radiogram by Dr. Harrison Orton, showing bismuth porridge shadow 3 in. to 4 in. long in stenosed part between heart and vertebral column. Patient was kyphotic and a belly-breather.

It is suggested that such a subject during muscular exertion, even doing light work, such as a storekeeper, on straightening his spine was likely to subject his gullet to undue stress (pressure between heart, etc., and spine), strain (pull owing to descent of diaphragm and abdominal viscera), and friction (rub between moving viscera and spinal column). Such excessive intrinsic mechanical forces must impinge mainly about three places: First,

the area of excursion of the cricoid downwards; secondly, behind the tracheal bifurcation and left bronchus; thirdly, about that portion of the œsophagus which was in contact with its moving foramen in the diaphragm. The brunt of the conflict had fallen in this case on the second of the above sites, and the diagnosis did not admit of much doubt. Opinions were solicited both as to diagnosis, treatment, and suggested pathogenesis.

A CASE OF INTRA-NASAL DISEASE (OBSTRUCTION, PRESSURE, AND ETHMOIDAL SUPPURATION), ASSOCIATED WITH AGGRAVATED, LIFE-LONG STAMMERING.

BY DR. SCANES-SPICER.

The intra-nasal disease was cured by operation in September, 1909. (Partial reduction of both inferior tubinals. Resection of right middle turbinal. Curettement of ethmoidal cells.) The patient was shown chiefly to illustrate the psychico-postural-respiratory method, by which he could instantaneously arrest his attacks of stammering, and by which he was gradually being trained to conquer the habit permanently.

LARYNGEAL CASE FOR DIAGNOSIS.

BY DR. H. J. DAVIS.

A man, aged seventy-six. Left vocal cord in cadaveric position; the right was now becoming similarly affected: both ventricular bands partially obscure the cords. There was slight pain on swallowing. An ulcer, or rather its margin, was visible last December, extending behind the arytenoids; this had vanished under iodides. A piece was removed by direct laryngoscopy, and the pathological report was negative. In spite of this, the exhibitor looked upon the case as malignant. Both cords would later become fixed in the mid-line.

Dr. DAVIS added that most of the members did not think it malignant. Already there was double abductor paralysis, which had developed while the case was under observation. The ulcer had disappeared under KI, but still he looked upon the case as one of œsophageal cancer with implication of both recurrent nerves.

The PRESIDENT thought it most probably a case of post-cricoid carcinoma.

CHILD SHOWING ADHESION OF UVULA TO TONSIL.

BY DR. JOHNSON HORNE.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

Saturday, March 5, 1910.

DR. EDWARD LAW, *President, in the Chair.*

The following cases and specimens were shown :

TWENTY SPECIMENS OF CHRONIC MIDDLE-EAR SUPPURATION AND ITS
SEQUELÆ. EIGHTEEN OF THE BONES OF THE INFANTILE TYPES
AND TWO CELLULAR.

BY ARTHUR H. CHEATLE.

INFANTILE TYPES.

Nos. 1 and 2.—Healed.

Nos. 3, 5, 6, 7, 8, 9.—Discharging at death ; death from other causes.

No. 10.—Labyrinthine involvement ; death from meningitis ; operation.

No. 11.—Death from meningitis, *per* posterior fossa.

No. 12.—Death from meningitis, *per* posterior fossa.

Nos. 13 and 14.—Death from temporo-sphenoidal abscess.

No. 15.—Death from temporo-sphenoidal abscess and meningitis.

No. 16.—Death from cerebellar abscess and thrombosis of the lateral sinus.

No. 17.—Death from lateral sinus thrombosis.

No. 18.—Death from other causes several years after operation for extra-dural abscess in posterior fossa.

CELLULAR TYPES.

No. 1.—Healed.

No. 2.—Caries in middle and posterior fossa ; the precise cause of death is unknown.

“ At a meeting of the Otological Society of the United Kingdom, held on May 4, 1907, I showed ninety-six specimens of what I called the ‘ infantile ’ types of the temporal bone, and I then stated how very frequently they were met with when operating for chronic suppuration and its sequelæ, and suggested that the anatomical conditions found therein were responsible for the per-

sistence of suppuration from the middle-ear tract. Since then I have particularly noted the type of bone when operating for chronic suppuration and its sequelæ, and found, almost invariably, the dense outer antral wall and absence of mastoid cells characteristic of the infantile types. Mr. Jenkins has made microscopical sections of pieces of the dense outer antral wall removed at operation, and was unable to discover any evidence of osteosclerosis. I have made sections of twenty temporal bones in which chronic suppuration was evidenced, and eighteen of them were 'infantile' in type and two were cellular. I bring them for your inspection to-day, the details being given with each. The eighteen had healed on persistent suppuration, and death had occurred in nine as a result. The pathway of extension from the antrum has been influenced by the anatomical condition present. The danger of the types is very evident. It will be noticed that the superior or posterior segment of the membrane is involved in all the eighteen.

"Of the two cellular bones, in the first the disease of the middle ear is shut off from the antrum by a distinct cicatricial band, and there is no evidence to show that the antrum was ever affected; in the second, extensive disease of the middle and posterior fossæ is present, but I have no record of the case.

"The manner in which the types are responsible for chronic suppuration from the middle-ear tract is, in my opinion, as follows: The antrum becomes infected in many cases, though not in all, from the lower middle ear in acute middle-ear inflammation, especially in scarlet fever and measles. If mastoid cells are present they also become infected, necessitating most probably the Schwartz operation. If either of the infantile types is present the infection is unable to penetrate to the mastoid process or through the outer wall of the antrum, and many things may happen:

"(1) It is possible that the drainage through the membrane is sufficient to produce a cure.

"(2) Symptoms may arise necessitating the opening of the antrum. I may here say that this condition in the types cannot give rise to the classical 'mastoid' signs, and I think it is important that the diploë should not be opened up.

"(3) Intra-cranial or labyrinthine complications may be produced. Or—

"(4) Changes in, and destruction of, the lining membrane, with caries of the bony walls, and especially of the 'fœtal' squamous

cells, or of the ossicles, may be produced, and a chronic discharge from the middle-ear tract established with all its later possibilities of extension. Here also the complications take place without classical 'mastoid' signs.

"I should like to remark how frequently one reads in the records of operations for grave complications of chronic ear suppuration that the 'mastoid was sclerosed,' or words to that effect.

"It must be the experience of all aural surgeons that, apart from cases of tuberculosis, they have rarely, if ever, seen a case of acute suppuration become chronic under their hands. In my opinion this is due to the fact that the infection is most frequently due to some specific fever while the patients are isolated in a fever hospital or elsewhere, and unless an obvious complication occurs they leave their isolation with a chronically discharging ear in which an infantile type is present.

"The clinical features of chronic antral implication in the infantile types are—a chronic discharge from the middle ear with a perforation involving the posterior-superior or superior segments of the membrane, with or without caries of the ossicles and outer antral wall, or of granulation or cholesteatoma, with ability to draw pus from the attic and antrum by means of Peter's magnifying speculum.

"I believe that the X rays will in the future be of the greatest service in connection with the diagnosis and treatment of suppuration in the temporal bone by enabling us to decide the type of bone present."

Dr. URBAN PRITCHARD was convinced that Mr. Cheatle's explanation was correct. He likewise disbelieved in any pathological condensation of bone in middle-ear suppuration, save in that found around a large cholesteatomatous antrum.

Mr. WHITEHEAD had recently seen a temporal bone of a case of acute otitis media, which had terminated fatally from meningitis. At the operation the whole mastoid process was found to be sclerosed.

Mr. JONES asked what Mr. Cheatle meant by "opening the diploë"?

Mr. E. WAGGETT related a case in which an operation had been performed upon the mastoid of a young woman who had been suffering from severe mastoid pain simulating mastoiditis. No suppuration was found, but the process was noticed to be of the infantile type.

Mr. CHEATLE, in reply, expressed his wish that the members would avail themselves of his offer to allow them to study the specimens. As a rule the dense outer wall he had described was what was found when operating for chronic suppuration, and the question he asked was, Was this type of temporal bone responsible for suppuration becoming chronic? In reply to Mr. Jones, he said that in acute suppuration when the antrum was laid open there was little risk of infecting the diploë.

But in suppuration there was danger. In a case of chronic suppuration recently under his care, the diploic part of the mastoid was opened up in performing the operation; three days later pain and cedema over the tip of the mastoid processes were found, so that the wound had to be reopened and the infected diploë cleared out.

CASE OF PEDUNCULATED PAPILLIFORM GROWTH SPRINGING FROM THE POSTERIOR BORDER OF THE CARTILAGINOUS MEATUS. (PHOTOGRAPH AND MICROSCOPIC SECTION.)

BY DR. W. MILLIGAN.

C. M—, male, aged twenty-eight, came to hospital complaining of an almost continuous boring pain in his left ear of eight months' duration, which he attributed to the result of a blow. Upon examination a naevus was found to occupy the whole of the left tragus. The auditory meatus was entirely occluded by a pedunculated papilliform growth springing from its posterior margin and almost filling the concha. On pressing it forcibly to the side a view of the membrana tympani was obtained. There was no defect in hearing, and tuning-fork tests were normal. The growth was removed, and the following report of its structure received: "There is an invasion by malignant epithelial cells of the structures of the true skin—*i. e.* the processes run around the sebaceous glands and enclose them in a most intimate manner." Since the removal of the growth the patient has had no pain, and the surface from which the growth was removed had completely healed. No enlarged glands were to be felt. What treatment should be adopted?

Dr. MILLIGAN added that as there was some doubt as to the malignancy of the growth, and as at the present moment the patient felt perfectly well and seemed well, he did not feel justified in operating any further. This case was another instance of malignant disease ascribed to injury, like a case he had shown some time ago.

Mr. WEST had had a similar case, in which the base of the growth was doubtfully malignant while the apex was considered to be purely papillomatous. The growth had been removed two years ago without recurrence so far; consequently he thought that Dr. Milligan would be justified in leaving the present case without any further operation, so long as no recurrence manifested itself.

Dr. DUNDAS GRANT said they must not be too impressed by the microscopic data, especially when they were not absolutely characteristic. Two or three years ago he saw a lady who suffered from intense pain in the ear, and in the deeper part of whose meatus was an ulcer with everted edges. A portion of it was removed for microscopical examination, when it was said to be invaded by epithelial cells and was almost certainly malignant. He scraped it, and for some reason the pain disappeared, as also did the ulcer. Another case Dr. McKenzie saw with

him which answered much the same description, except that it was a flatter ulcer, with fungating edges, and the report here also was that it was almost certainly epithelioma. He removed it, and cauterised deeply the parts from which it arose, and no recurrence took place. But he believed that the meatus was almost completely closed. The case was probably not malignant.

MR. MACLEOD YEARSLEY endorsed Dr. Grant's suspicion of the results of microscopical examination. He himself had on one occasion shown a specimen of a papilloma filling and growing from the concha, which he had removed together with the cartilage from which it sprung. Examination of the base of the growth by the microscope raised a suspicion of malignancy, which was not confirmed by the clinical course of the case.

DR. A. BRONNER suggested that while the case was being kept under observation, radium or the X rays might be employed in order to restrain any tendency to recurrence.

MR. FAGGE held that, as there was really nothing, either in the clinical history or in the microscopical appearances, to suggest malignancy, the case should be left alone. Radium or X-ray treatment, by irritating the parts, might encourage recurrence.

DR. MILLIGAN, in reply, said that he intended to refrain from touching the case. He asked Mr. West whether, in the event of recurrence, he would be satisfied with a removal of the concha and external meatal wall, or would he remove the whole external ear.

MR. WEST replied that he would not sacrifice the pinna.

CASE OF LARGE NASO-PHARYNGEAL GROWTH IN A BOY, AGED TWELVE (SPECIMEN SHOWN).

BY DR. W. MILLIGAN.

A. W—, male, aged twelve, was seen in consultation on account of nasal obstruction, frequent attacks of spontaneous nasal hæmorrhage, and deafness upon the left side. Naso-pharynx found occluded by large, firm, and hard growth springing from the vault and protruding into the left nasal passage. Marked deafness upon left side, membrane much retracted, and middle ear full of a non-purulent exudation. A previous attempt had been made to remove the growth through the nasal passage, but had been abandoned on account of its impracticability and the profuse hæmorrhage which ensued. Under chloroform the left upper jaw was excised and access obtained to the naso-pharynx; growth removed; uninterrupted recovery.

DR. D. R. PATERSON had removed similar growths without sacrificing the upper jaw by the method of Brady,¹ with Langenbeck's forceps and the finger in the naso-pharynx.

DR. FITZGERALD POWELL said that the growth was probably a fibroma from the basi-sphenoid. In a similar case he had found that

¹ See JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1906.

splitting the soft palate and chiselling away the hard palate afforded him free access. There was, he thought, no necessity to remove the upper jaw.

Mr. MACLEOD YEARSLEY had also found that splitting the soft palate was quite sufficient.

Dr. STCLAIR THOMSON said that, although he had not been present at the accouchement, he remembered Dr. Fitzgerald Powell's case, for the tumour measured eight inches in circumference. In the course of a tour he had lately made of the London museums he had been struck by the number of cases of naso-pharyngeal tumour which had been operated on by removal of the upper jaw—by general surgeons, not by rhinologists. He had seen several himself in which the growth had been removed through the mouth, or by means of the Moure operation, or of the modified Rouge operation.

Mr. PETERS had witnessed Dr. Fitzgerald Powell's very successful case, and had been struck by the facility with which the tumour had been removed.

Dr. DUNDAS GRANT said that one of the greatest services which rhinologists had rendered was the early detection of those tumours and the removal of them in suitable cases through the natural passages. There were some good periosteal elevators devised by Guyon, in Paris, and with them, aided by the finger in the pharynx, and working partly through the pharynx and partly through the nose, one could generally get the better of those tumours. It was wise to be prepared for great hæmorrhage, though it might not occur.

Mr. FAGGE related a case in which he had succeeded in severing a naso-pharyngeal fibroma by means of a snare passed through the nose. The tumour was so large that its apex rested on the epiglottis and tongue, and the chief difficulty lay in the effort to get the loop of the snare over this portion of the tumour. After separation the growth was delivered by way of the mouth. Its base was curetted, and there had been no recurrence. Extraordinary precautions were adopted to meet severe hæmorrhage, but none took place. Of the other operative measures mentioned, perhaps the best was Nélaton's—splitting the soft palate. Resection or excision of the upper jaw was quite unnecessary at the present day.

Dr. H. PEGLER agreed with Dr. Dundas Grant as to the diagnosis.

Dr. MILLIGAN, in reply, held that it was difficult to criticise a case like this unless the patient was seen before operation. At the operation three alternatives had presented themselves to his mind: (1) Snaring, which was rejected because the growth had a very broad base; (2) splitting the soft palate; and (3) resection or removal of the upper jaw. The size, prolongations, and site of the tumour induced him to adopt the last-named procedure, and he was still convinced that he had chosen the best course. Ten or twelve years ago he showed a case at this Society, in which he had removed a similar growth by means of a long chisel; exactly two years later it had to be removed again, but no recurrence had since occurred. He would not dream of removing the upper jaw if the case did not call for that step.

DEMONSTRATION OF KUHN'S INSTRUMENTS FOR PER-ORAL INTUBATION.

By DR. W. MILLIGAN.

Dr. D. R. PATERSON had seen Kuhn's instruments on the Continent. The method seemed to be useful save when the larynx was very deep.

Dr. STCLAIR THOMSON contrasted the method with that of laryngotomy, and expressed his preference for the latter. He feared that with Kuhn's instruments the tubes would be in the way when operating through the mouth. When laryngotomy had been done, on the other hand, the anæsthetist did not interfere with the operation. It seemed to him, also, that with laryngotomy there was less traumatism and less danger. He doubted whether the results by this method could compare with the results of laryngotomy that Mr. Butlin had obtained.

The PRESIDENT observed that Kuhn's instruments did not seem to be known in England.

Dr. DUNDAS GRANT said the instruments were a great improvement upon the stiffer form of tube, and he would be glad to hear what cases Dr. Milligan had used them for, as the results of actual experience were most valuable.

Mr. FAGGE asked whether the method could compare with the administration of an anæsthetic through the nose.

Dr. MILLIGAN had first seen the method abroad in Zwillinger's clinique. It was useful in operations about the mouth, as in the case of naso-pharyngeal growth he had shown at this meeting. There was no difficulty in passing the tube: one stood well above the patient and drew the tongue well forward. The tube in the mouth did not really get in the way at all: it could be drawn to one side and the mouth packed with gauze. Regarding injury to the larynx with the tube, he had only once seen some laryngitis follow its use, and that passed off in a few days. The method was better than laryngotomy in that it avoided a cutting operation.

Mr. FITZGERALD POWELL asked if the pharynx could be packed with the tube *in situ*.

Dr. MILLIGAN, in reply, said that the pharynx could certainly be packed, although the packing tended to get soaked, but blood could thereby be prevented from reaching the larynx.

CASE WITH WELL-DEFINED AND TRANSITORY MÉNIÈRE'S SYMPTOMS.

BY DR. DAN MCKENZIE.

The patient, a man, aged fifty-seven, was spare in habit and somewhat nervous in disposition. When first seen he had been suffering for three or four months from attacks of vertigo and vomiting, which came on regularly every seven or eight days and interfered with his activity to such an extent that he was compelled to give up work (Post Office official). The first attack was experienced about eighteen months ago, but there was no repetition of the symptoms until the present series began. Each paroxysm passed through a definite and precise series of stages. The first symptom noticed was that of hyperacusis, and at first it affected the left ear only. Beginning gradually, it slowly became more marked, extending to the right ear also, until even slight sounds became unbearable. This introductory stage occupied two or three days. On the third day vertigo set in somewhat abruptly, and

rapidly got more and more severe, until the patient was unable to keep upright. Sickness and vomiting ensued and continued for about an hour, the vertigo meantime remaining unabated. As the severity of the attack subsided the patient stated that his head and scalp became very sensitive to touch, but there did not seem to be any actual headache. The vertigo was accompanied with deafness so considerable that he could only hear shouts. The paroxysm terminated in a deep sleep, lasting five or six hours, from which he awoke to find himself relieved from all discomfort, including the deafness, save that of weakness. The whole attack from beginning to end lasted from three to four days.

Hearing.—He had been “slightly deaf in the left ear” since an attack of influenza twenty years ago. There was no history of discharge from the ears.

TESTS.

	Right.	Left.
Watch	= 2 in.	— ∞
Galton	4.6	5.6

TUNING-FORKS.

		Right.	Left.
64 V.D.	{ Meatus	— 5	— 10
	{ Mastoid	— 9	— 8
	{ Rinne	+	+
128 V.D.	{ Meatus	— 6	— 10
	{ Mastoid	— 9	— 20
	{ Rinne	+	+
256 V.D.	{ Meatus	— 3	— 10
	{ Mastoid	— 2	— 4
	{ Rinne	—	—
	{ Weber	>	
512 V.D.	{ Meatus	— 2	— 6
	{ Mastoid	— 4	— 2
	{ Rinne	+	+

VESTIBULAR REACTIONS.

	Right.	Left.
Caloric (22 to 24° C.).	{ Nystagmus in	Nystagmus in
	{ 30 seconds.	50 seconds.
	{ Slight vertigo	No vertigo

That is, very slightly impaired response right, and considerably impaired response left, corresponding closely with the hearing powers.

General condition.—No albuminuria; pupils and knee-jerks normal; fundus oculi normal; arteries rather tortuous. The patient had always been nervous, and complained greatly of the worry and pressure of his occupation.

Treatment.—The patient was reduced to a strictly vegetarian diet for several weeks, and was given 8 gr. to 10 gr. of potassium iodide three times a day, with immediate benefit, for, although he found the treatment "lowering," he confessed that a definite attack of vertigo did not occur during this time. In consequence of the success attendant upon these measures a relaxation of the stringency of his regimen had been recently permitted.

The evanescent character of the symptoms put the explanation of recurrent hæmorrhages out of court, and it was also difficult to imagine that a serous effusion would occur with such regularity and disappear with such rapidity. Consequently the exhibitor was inclined to assume a vaso-motor disturbance as the most likely cause of the symptoms, possibly toxic in origin, and affecting the auditory system in a manner that might resemble the ocular disturbances of migraine. No paræsthetic or parietic phenomena were complained of, however, if we except the hyperæsthesia of the scalp. But a patient suffering from violent vertigo was naturally incapable of appreciating minor nervous disturbances.

Dr. DUNDAS GRANT said that since the vertigo seemed marked, and it was not merely confusion, the term "Ménière's symptom" was appropriate. It seemed to be on all fours with the cases described in Politzer's text-book as "angeio-neurotic disturbance of the internal ear." He asked whether it was usual in the normal subject to get nystagmus and vertigo in thirty seconds. Did not that indicate that there was an increased sensitiveness of the vestibular nerve rather than otherwise?

The PRESIDENT asked whether the Ménière symptoms were associated with the left ear. Had the exhibitor tried the effect of rarefying the air in the left meatus. He asked why the patient had been put upon a vegetarian diet, for he seemed to be suffering from neurasthenia, for which a tonic and supporting treatment was more suitable.

Dr. URBAN PRITCHARD agreed with the President respecting these cases. Lowering treatment was utterly wrong.

Dr. DAN MCKENZIE, in reply, said that he was disappointed that no member had discussed the possibility of migraine as the cause of the attacks. It had seemed to him that the symptoms were, so to speak, the auditory phenomena comparable with the ocular phenomena of ordinary migraine. It was this consideration which had led him to try the effect of vegetarian diet, a method of treatment which was often of marked benefit in migraine. And the success of the treatment from the patient's point of view added support to his theory. He had not tried the effect of rarefying the air in the left meatus, but would do so. With regard to Dr. Grant's question, he regarded an induction-period of thirty seconds as about normal. Less than twenty or twenty-five seconds was abnormally

short. But regard should be paid also to the character of the reaction. In this case that was slight.

THICKENING OF THE CARTILAGE OF BOTH AURICLES (? OTHÆMATOMA).

By DR. DAN MCKENZIE.

Patient, a florid, healthy man, aged forty-five, first observed his "ears" becoming "thick" about eight months ago. The pinna of both ears was the seat of hard, irregular, rounded thickenings, closely attached to, and, indeed, seemingly incorporate with the cartilage. The evolution of the thickenings had been watched. A small, fluctuating, cyst-like swelling suddenly appeared (?sub-perichondrial), and gradually became less in size and hard in substance until it assumed the aspect described.

The patient had never been insane and there was no insanity in his family. There was no history of traumatism. His occupation exposed him at times to cold, but not to any unusual extent.

According to Politzer, bilateral othæmatoma is uncommon.

Dr. MILLIGAN asked if there was any syphilis in the man's history. It was not othæmatoma.

Mr. W. CHICHELE NOURSE was also of opinion that the case was not one of othæmatoma. It seemed rather to be perichondritis. He asked whether the contents of the cyst had been examined.

Mr. JONES had seen a similar case in which also both syphilis and trauma could be excluded.

Dr. DAN MCKENZIE said there was no history of syphilis, and the patient had been under pot. iodid. for several months without any apparent benefit. The cysts had been punctured, and Dr. Wyatt Wingrave reported that the fluid was pure serum containing neither cells nor bacteria. The exhibitor agreed that the title "othæmatoma" was a misnomer, but said that the condition described in the text-books under this heading seemed to be the same as this case. Consequently, he suggested that the name of the condition required alteration.

A CASE OF AUDIBLE TINNITUS.

By MR. ALEXANDER SHARP.

A. D—, male, aged forty-five, complained of a "scraping noise" in his right ear, which began about twelve years ago, and had been almost constant ever since. The patient attributed it to a chill which followed a long cycle run, and he stated that the character of the noise had varied very little since he first noticed it. Hearing in both ears was practically normal, and there was no marked pathological condition in the meatus, nose, or nasopharynx. Sleep was much disturbed and his general health was impaired. The murmur could be heard if the observer placed his

ear close to the right ear of the patient. With the otoscope the murmur was very distinctly heard and was synchronous with the pulse. Pressure applied over the carotid artery controlled it.

Listening with the stethoscope it might be noted—(1) that the murmur was heard very distinctly over the right mastoid process and over the right temporal region; (2) that it was also heard distinctly over the same areas on the left side, although the patient did not hear it in the left ear; (3) that it was heard over any part of the cranium, diminishing as one approached the middle line.

Sneezing, coughing, or inflation of the middle ear caused a momentary cessation of the sound.

The PRESIDENT asked if there were any suggestions regarding treatment. The general opinion seemed to be that it should be left alone.

Dr. DUNDAS GRANT asked whether Mr. Sharp had tried the effect of compression of the vertebral arteries on the appropriate points at the back of the neck. If so, and it gave relief, it would be well to apply little pads of cork at the spots and put a bandage round to keep them in place.

Dr. H. J. DAVIS suggested the use of 5j-5ij ac. hydrobrom., with mʒ-x tc. nuc. vom. If this failed there was little good in trying any other drug treatment. Pot. iod. quinine and ac. salicyl. not infrequently make tinnitus worse.

Mr. A. SHARP, in reply, said the case had been subjected to all sorts of treatment by many different otologists. But it was difficult to get the man to say that he had received any benefit from these efforts. Indeed, he was rather inclined to be uncharitable in his remarks about aural surgeons, since their final advice generally was that he should try to forget all about the noise. It had distressed him so much, however, that he had threatened to commit suicide. Ligature of the internal carotid might improve matters, but there was a possibility that when the collateral circulation was established the tinnitus might return, and this had kept him from performing that operation. One interesting point in the case was that after inflating the middle ear the noise entirely disappeared for about a minute.

CASE OF MUCOUS POLYPUS PRESENTING AT THE PHARYNGEAL ORIFICE
OF THE LEFT EUSTACHIAN TUBE IN A MAN SUFFERING FROM
BILATERAL CHRONIC ADHESIVE OTITIS MEDIA.

BY MR. J. ARNOLD JONES.

Male, aged forty-five. History: Deafness for ten years; onset after rheumatic fever. Right ear the first to be attacked, the left following some years later. No tinnitus, no vertigo, no discharge. Paracusis Willisii present. Had been troubled slightly with nasal obstruction and discharge for about five years.

Examination.—Right ear: Drum slightly retracted; malleus

fixed. Left ear: Drum very retracted, especially in upper quadrants; opaque; mallens fixed. Eustachian catheter applied to right ear produced no improvement. Sounds were distant and small. Eustachian catheter applied to left ear produced marked improvement. Sounds, at first distant and sibilant, became normal.

Examination of Nose by Anterior Rhinoscopy.—The nostrils were narrow and the inferior turbinals were hypertrophied, especially the posterior ends. No signs of polypus formation.

Examination of Naso-pharynx by Posterior Rhinoscopy.—Presenting at the orifice of the left Eustachian tube was easily seen a round, smooth, greyish-blue tumour about the size of a large cherry-stone. This entirely filled the lumen of the orifice, and seemed to bulge that portion of the lateral pharyngeal wall surrounding the orifice towards the middle line. This tumour had varied slightly in size at different times, and was now smaller than ever, but there was more bulging of the lateral pharyngeal wall. The posterior ends of the inferior turbinals were hypertrophic.

It could be noted that the polypus appeared on the side of better hearing power. This patient had been under observation for two years, during which period his hearing power had considerably varied. At present it was better than when first seen, though not as good as after the first course of treatment. Roughly speaking, it remained stationary.

TUNING-FORK AND OTHER TESTS.

	Right.	Left.
Aconimeter	22 in.	30 in.
Voice	16 in.	8 ft.
Whisper	<i>Nil</i>	6 in.
Rinne C	Negative (δ)	Negative (δ)
Rinne C ₂	Just positive	Just positive
B. C. C on Mastoid	+ 10 sec.	+ 12 sec.
Galton, W.	— 1 revolution	— 1 revolution
Air-conduction:		
3 C (16)	<i>Nil</i>	<i>Nil</i>
2 C (32)	<i>Nil</i>	<i>Nil</i>
1 C (64)	<i>Nil</i>	<i>Nil</i>
C (128)	— 30 sec.	— 25 sec.
C ₁ (256)	Much diminished	— 15 sec.
C ₂ (512)	Much diminished	— 8 sec.
C ₃ (1024)	<i>Nil</i>	— 18 sec.
C ₄ (2048)	<i>Nil</i>	— 20 sec.

Mr. WHITEHEAD, referring to the remark that the patient had been under observation for two years, asked whether any attempt had been made to deal with the tumour.

The PRESIDENT said that no one seemed to have ever seen a similar case.

Mr. JONES, in reply, said that the patient had only been seen at long intervals during the two years. He had not operated on the tumour because that ear was the best for hearing, the right ear being totally deaf. He thought, however, that a puncture would be harmless. The question was whether it was a cyst or a mucous polypus.

A CASE OF OSTEO-MYELITIS OF THE RIGHT TEMPORAL BONE, SECONDARY TO MASTOID DISEASE; REMOVAL; RECOVERY.

By MR. HUNTER TOP.

A girl, aged eighteen. Chronic middle-ear suppuration in both ears, of eight years' duration, the sequela of scarlet fever. First seen in out-patients' department on February 12, 1909. In right ear, large perforation of tympanic membrane, with granulations in upper quadrant. Pain behind ear, but no tenderness on pressure, and no swelling or œdema over mastoid process. Conservative treatment caused some improvement. On March 26 not so well: pain in head, excessive tinnitus. On April 3 there was some swelling over the mastoid process, and the patient was taken into hospital for the complete mastoid operation, which was performed by the house-surgeon. The mastoid process was extensively carious, and there was an area of necrosed bone, about 1 in. square, lying over and in front of the lateral sinus. No note was made of the condition of the tegmen tympani, nor of the squamous portion of the temporal bone. The wound cavity was left open and lightly packed. On April 15 the parotid region became swollen, and, on pressure being applied, pus oozed into the wound cavity through a fistula in the anterior meatal wall. The œdema and swelling gradually increased over the parietal and temporal region. The temperature varied between 99° and 101° F. for two weeks, and then became normal to subnormal. The patient was well otherwise, except for occasional headaches, sometimes acute; but seemed to have fits of drowsiness.

On May 5 an incision was made from the upper angle of the mastoid wound and upwards over the temporal bone, exposing the whole of the squamous portion as well as the zygoma. The surface of the bone was pitted, worm-eaten, and hæmorrhagic in patches, and small flakes of necrosed bone could be separated off. The whole of the squamous bone was removed with forceps until healthy

bone and dura mater were reached. The underlying dura mater was thick, rough, and covered with purulent secretion and granulations. The posterior half of the zygoma, the whole of the tegmen tympani, together with the anterior wall of the bony meatus, were also necrosed and removed, so that the condyle of the lower part could be felt. The wound-surface was irrigated freely with weak biniodide solution, and packed lightly with gauze. Convalescence was gradual, the patient not leaving the hospital till July 1, the wound being then practically healed over. A shield of aluminium was worn to protect the brain over the area deprived of its bony covering. The pulsations of the brain were still visible over the wound area, though to a much lesser extent than in July. The case is very similar to, though less extensive than, the one he had communicated to the Section on February 6, 1909.

Dr. DAVIS recommended the removal of the shield. He had seen many cases of extensive denudation of the brain performed by Mr. Armour, and it had been found that the growth of the hair led to a tightening up of the soft parts; this growth was hindered by the shield. He had recently seen such a case in a child, the pulsations of whose brain used to tilt her hat about, but recently the skin had become firm and the shield was found to be unnecessary.

Mr. HUNTER TOD was aware of this change in the flap, and would now remove the shield.

A GIRL, AGED FIFTEEN: RADICAL MASTOID OPERATION EIGHTEEN MONTHS AGO; AN ADVENTITIOUS MEMBRANE HAD FORMED WHICH SO CLOSELY RESEMBLED A NORMAL DRUM THAT ITS REAL NATURE MIGHT BE OVERLOOKED.

By DR. H. J. DAVIS.

A radical mastoid was performed in August, 1908. The cavity was dry and healed in five weeks. Three months ago she came to the hospital with "earache following a cold in the head," and mucus could be detected behind what was taken to be the drum. This was evidently not so. The Eustachian tube was curetted at the time of operation and the remains of the drum removed. The membrane, which was post-operative scar-tissue, was very thin and translucent and insensitive to the probe. The opening into the antrum could be seen in a plane nearer to the observer. The hearing-power was remarkably good.

Mr. HUNTER TOD said that he had observed that the hearing was generally very good in cases with an adventitious membrane. He supposed that it acted as a drum. Of course the formation of such a membrane was a pure accident.

Dr. FITZGERALD POWELL said that the hearing power in the affected ear in this case was not good. It had been lost, because the patient could not hear the watch on contact. The hearing in the other ear was good.

Dr. URBAN PRITCHARD could not agree with Mr. Hunter Tod. In what way could this membrane act like the normal membrane?

Mr. HUNTER TOD said that he could not answer that question, but he was sure of the fact that these cases did hear remarkably well.

Dr. KELSON remembered a similar case being shown to the old Society, in which, though the ossicles had been removed, the patient could hear the watch at twelve inches.

Mr. JONES supposed that the good hearing was due to the moisture of the tympanum, the adventitious membrane preventing evaporation.

Dr. FITZGERALD POWELL held that the hearing power after the radical mastoid did not depend upon the retention of the membrane, but upon the state of the inner tympanic wall.

Dr. MILLIGAN agreed with Mr. Hunter Tod. There were two factors upon which depended the amount of hearing left after the mastoid operation—namely, the integrity of the stapedia joint and a mechanism to prevent evaporation. The latter condition was secured by a membrane such as this.

The PRESIDENT asked if the Eustachian tube was occluded.

Dr. DAVIS, in reply, said that the patient's hearing had been excellent, but recently she had had a cold with earache, and since then the hearing had become impaired. He had curetted the tympanic end of the Eustachian tube, but it was not obliterated because the patient could practise successfully the Valsalva method of inflation.

A GIRL, AGED TEN, WITH A (?) PAPILLOMA ON THE POSTERIOR
SUPERIOR QUADRANT OF THE RIGHT DRUM.

By DR. H. J. DAVIS.

The appearance of this little growth was peculiar. There were no symptoms referable to the ear, and it was merely detected in the course of a routine examination. The child was attending for follicular tonsillitis.

A WOMAN, AGED FORTY-FIVE, WITH LEFT FACIAL PARALYSIS FOLLOWING
A MILD CATARRH OF THE MIDDLE EAR; NO PERFORATION.

By DR. H. J. DAVIS.

The patient shown was one of two women with a precisely similar condition attending the hospital at the present moment. In both cases complete facial paralysis resulted from a mild attack of earache following coryza (? influenzal). In the patient exhibited this occurred five months ago, and she was recovering very slowly under electrical treatment. When first seen the membrane was in-drawn and there was slight mastoid pain, but there was no redness of the drum. The local conditions rapidly subsided, but

the paralysis remained and still persisted. Hearing was normal. She stated that many years ago she had slight earache on the other side, and "the face was drawn over to the left for months." It had been suggested that this was a neurosis, but the reaction of degeneration was present in the facial muscles, and the condition was probably due to some abnormality or deficiency in the canal of the facial nerve.

Dr. DUNDAS GRANT said there was probably some dehiscence in the canal. She lost the sense of taste on the left side of the tongue for some time, and she still had extreme sensitiveness to sudden noises on the paralysed side, indicating paralysis of the stapedius and loss of the protective influence of that muscle.

Mr. HUNTER TOD asked what was the final result in these cases.

The PRESIDENT remarked that an interesting point in the case was the fact that the patient had had the other side similarly affected some years ago.

Dr. DAVIS, in reply, said that facial paralysis or paresis was extremely slow in passing away. In reply to Dr. Grant, he said that the retraction of the drum might be secondary to stapedius paralysis.

A CASE OF CONGENITAL (?) DEFECT OF BOTH TYMPANIC PLATES.

By MR. E. WEST.

Female, adult. When first seen, patient had a long-standing bilateral otorrhœa; on the left side there was a scar over the mastoid, and the meatus was greatly contracted. After a radical mastoid operation the meatus again became almost closed, with continued suppuration. Recent creation of left mastoid fistula and right radical mastoid operation. The tympanic plate appeared to exist only in its deepest part; the posterior wall of the bony meatus was formed by the anterior surface of the mastoid; there seemed to be bone in the deepest part of the floor and anterior wall, but for the most part both were membranous. There was no feature suggesting that destruction of bone had taken place; the meatus on this side was roomy and of usual form. On movement of the jaw the excursion of the condyle was still clearly visible. The condition suggested a failure of development of the tympanic ring into the tympanic plate and the retention of the infantile form.

CASE OF ENDOTHELIOMA OF TEMPORAL BONE (WITH TEMPORAL BONE AND MICROSCOPICAL SECTIONS).

By DR. D. R. PATERSON.

The patient, a woman, aged twenty-seven, was admitted to hospital on December 31 last. She gave a history of offensive

discharge from the left ear for at least fifteen years. This continued without change until, two months before admission and one week after her second confinement, she was seized with severe pain in that ear, and this had persisted without remission. She looked extremely ill, but was quite sensible and gave a clear account of her illness. The temperature was 99.2° F., and pulse 92. The left auricle and surrounding parts stood out from the side of the head, and greyish-yellow offensive discharge oozed from the meatus. There was bogginess behind, above, and in front of the auricle, with slight pitting on pressure. There had been no hearing in the left ear for years, and the patient's state did not permit of definite tests. Slight nystagmus was noted on looking to the right, and the optic discs were normal. An operation was performed the same day. The usual posterior incision through cedematous tissue came upon a large cavity filled with soft greyish masses occupying the site of the antrum and the mastoid cells. The posterior wall of the meatus had disappeared completely. There was very little pus. At first sight it looked as if the bone were scooped out by old-standing cholesteatoma, but the soft friable masses gave rise to suspicion of new growth. The soft tissue was easily removed without much bleeding, and it was seen that the temporal bone had been hollowed out to an extensive degree, laying bare a large part of the dura, both of the posterior as well as the anterior fossa. The roof of the antrum and tympanum and a part of squama had disappeared, and the ragged bone showed signs of infiltration by growth. Wiping the tympanic cavity produced twitching of the face, and the prominence of the semi-circular canal stood out well. The removal of only very little superficial bone was required to complete the exposure of the cavity, and trimming the bony edges of the gap in the squama appeared to get rid of all affected bone. A smooth cavity of large size was left, and this was packed with gauze. Microscopically the growth appeared to be an endothelioma.

The patient was much relieved by the operation. After a few days the growth began to appear again, especially in the upper part of the cavity. A rise of temperature began on January 19, and the patient became dull and listless, whilst the boggy condition appeared above the auricle. On January 26 the cavity was cleared of fresh growth, which had extended further along the squama towards the root of the zygoma. The exposed middle fossa dura appeared slightly thickened, but, as the growth peeled off rapidly, it was not further explored. The patient died four days later.

Summary of *post-mortem* report by Dr. Schölberg: There was localised basal meningitis, and the temporo-sphenoidal lobe was adherent to the dura at a point over the left petrous bone. Microscopic examination of the dura and adjacent part of the brain showed the growth to be an endothelioma which had grown from without through the dura into the brain substance.

Abstracts.

NOSE AND NASO-PHARYNX.

Kanavel, A. B.—*Removal of Tumours of the Pituitary Body by an Intra-nasal Route.* "Journ. of the Amer. Med. Assoc.," November 20th, 1909.

Kanavel advocates the operation of elevating the nose, cutting the cartilaginous septum, removing the middle turbinates, deflecting the septum, locating the sphenoidal foramina, biting off the attachment of the perpendicular plate of the ethmoid and vomer, entering the sphenoidal sinus, and thus reaching the floor of the sella turcica in removing pituitary tumours.

Macleod Yearsley.

Dupond, G. (Bordeaux).—*Epithelioma of the Naso-pharynx.* "Revue Hebd. de Laryngol., d'Otologie, et de Rhinol.," January 2nd, 1909.

The record of a case of this rare condition.

A man aged 58, apparently in robust health, had noticed some discomfort at the back of the throat and deafness of the left ear for four or five months. For six weeks he had been troubled with nasal obstruction, causing mouth-breathing at night. A noteworthy point was the entire absence of pain; he had, however, some tickling of the throat. The soft palate was pushed forward by a growth which filled the left side of the naso-pharynx, and could be seen below the lower border of the velum as a multilobular greyish red granulating mass. The tumour was firm in consistence, and deeply adherent to the parts which it covered.

Over the left parotid was a hard lymphatic gland with deep adhesions, and another smaller in the right carotid region. The left ear was affected with exudative catarrh. The nature of the tumour was proved by microscopic examination. The case was inoperable.

Chichele Nourse.

LARYNX.

Goldstein, M. A. (St. Louis).—*Lipoma of the Larynx.* "The Laryngoscope," September, 1909, p. 641.

Patient, a woman, age 33, had been suffering from hoarseness, difficulty in breathing, and stridor of gradually increasing severity for several years, culminating in marked respiratory distress, frequent coughing, restlessness, emaciation, and depression.

Examination of the larynx revealed "a large, rounded, pale yellowish-pink mass," "extending from the left lateral wall of the ventricular fossa, pushing the ventricular band upwards, and overlying both vocal cords." The left ventricular band was stretched and arched upwards by the tumour. Save for a small chink in front between the tumour and the right vocal cord, the glottis was entirely blocked, so that when the patient sat upright breathing was well-nigh impossible, and she instinctively leaned the head and neck towards the left side in order to get relief from the dyspnoea.

The growth was found to consist of two separate masses, one of which was easily removed with the cold wire snare, but in the attempt to snare the other the loop of wire became fixed round the pedicle of the tumour, and could neither be withdrawn nor made to cut through the growth. By dint of pulling forcibly upon it, however, Goldstein succeeded in bringing the tumour within reach of a long pair of scissors, with which he divided the pedicle, and so removed the tumour with the snare round it.

Microscopic examination proved the growth to be a pure lipoma.

A summary and discussion of the literature of this rare laryngeal neoplasm is incorporated in the article.

Dan McKenzie.

EAR.

Sydenham, Fred.—*Treatment of Facial Paralysis due to Mastoid Disease or the Mastoid Operation.* "Brit. Med. Journ.," May 8, 1909, p. 1113.

Case of facial paralysis following the radical mastoid operation in a boy, aged four. Two days after the operation the post-aural wound was again opened up, the aqueduct exposed, and the severed ends of the nerve defined. Silkworm gut was used as the scaffolding for the regeneration of the nerve; "a piece $\frac{1}{2}$ in. longer than the interval between the two openings in the bone was used, $\frac{3}{4}$ in. being inserted into each end of the bony canal." The post-aural wound was kept open in order to obtain better drainage. The area of anastomosis was covered with gutta-percha tissue at each dressing until the silkworm gut became covered with granulations. After three months slight movement of ala nasi was observed, and then the other facial muscles gradually recovered their function.

The advantages of uniting the facial end to end, when the ends can be found, is that an unsightly scar is avoided, and the recovery is comparatively rapid, in both of which respects it is preferable to facio-spinal accessory or facio-hypoglossal anastomosis. This operation is also easier than those other methods.

Dan McKenzie.

MISCELLANEOUS.

Stocker, S. (Lucerne).—*On the Contra-Indications for the Use of Fibrinolysin.* "Corresp.-Blatt. für Schweiz. Aertze," Year 39, No. 24.

Since too little attention, the author thinks, has been paid to this aspect of the question, he has collected some reports of the adverse effects of this drug, which some have asserted do not occur. As this form of treatment has been recommended for certain aural affections this account may not be out of place.

Quite apart from its possible value Stocker considers that there may be two main objections to its use: First, that in the scar-tissue under treatment it is possible some virulent organisms may yet only be lying dormant because of their encapslation, and that the action of fibrolysin may lead to their release and thus to a recrudescence of the original disease; and secondly, that such softening or absorption of scar-tissue in certain cases may constitute a danger in itself. For instance, Kassel has seen hæmoptysis recur, Békéss an acute condition set up in a case of old endocarditis, and Teleky perforative peritonitis take place, due to giving way of an operation scar in the pylorus, all of which were attributed to injections of fibrolysin. The writer also quotes a case of his own which he thinks bears on this point.

A woman, aged thirty-seven, had suffered for five years, the result of some painful adhesions in the abdomen. Twenty-five years ago she had had some periostitis of the left radius, which soundly healed in a few weeks leaving only a small patch of "thickening" on the inner side of the forearm. Thirty years ago she had been successfully vaccinated, to which three large dead-white scars on the left upper arm bore witness.

An intra-muscular injection of 2·3 c.cm. of fibrolysin (Mendel) was given in the *right* upper arm. Slight local pain followed, with an evening temperature of 38·2° F. She complained of headache, and the left forearm was tender, hot and œdematous. As these symptoms had improved in the course of forty-eight hours another injection of the same quantity was then given. A few hours afterwards Stocker was called to see her and found the temperature 39° C., pulse 100. The patient felt very ill. No local reaction was apparent around the site of the injection, but the *left* forearm was swollen, painful, hot, and pitted on pressure, whilst the vaccination scars were also soft and tender.

Under suitable treatment these symptoms disappeared in some two weeks' time, and fortunately he is able to report that the adhesions in the abdomen did not continue to give rise to any more pain; but Stocker remarks that although the issue in this case was happy, these facts should form a valuable warning against the unrestricted use of fibrolysin, and concludes by remarking that only by carefully considering each individual case shall we be able to exhibit this drug in accordance with the highest principles of medicine, viz. *Nil nocere*. *Alce. R. Tweedie.*

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**A CONTRIBUTION TO THE STUDY OF THE PATHOLOGICAL
ANATOMY OF DEAF-MUTISM.**

BY ALBERT A. GRAY, M.D., F.R.S.E.,

Surgeon for Diseases of the Ear to the Victoria Infirmary, Glasgow.

WHILE the social and educational aspects of deaf-mutism have received a considerable amount of attention from the time of the Spanish monk Ponce de Leon in the sixteenth century, and probably from times even earlier than this, the study of the pathological anatomy of this condition dates from recent times. Doubtless the chief reason for this neglect is the idea that such study will hardly influence the treatment of the condition. It is very possibly true that the deaf-mute will rarely stand to gain anything when the pathological anatomy of his condition becomes well understood, but even so it is hardly unscientific on the part of the aurist to ignore the subject. Fortunately this narrow view of the matter is now being abandoned, and the scientific investigation of the pathological changes in the deaf-mute is being undertaken for its own sake. At the same time it must be admitted that this change in the point of view is not as yet very apparent in this country, and consequently I have been unable to find a single record of the investigation of the ear of a deaf-mute in our medical literature. In Germany Siebenmann, Denker, Alexander, and several others have recorded the results of their examination, and the mystery which surrounded the subject is being gradually cleared away.

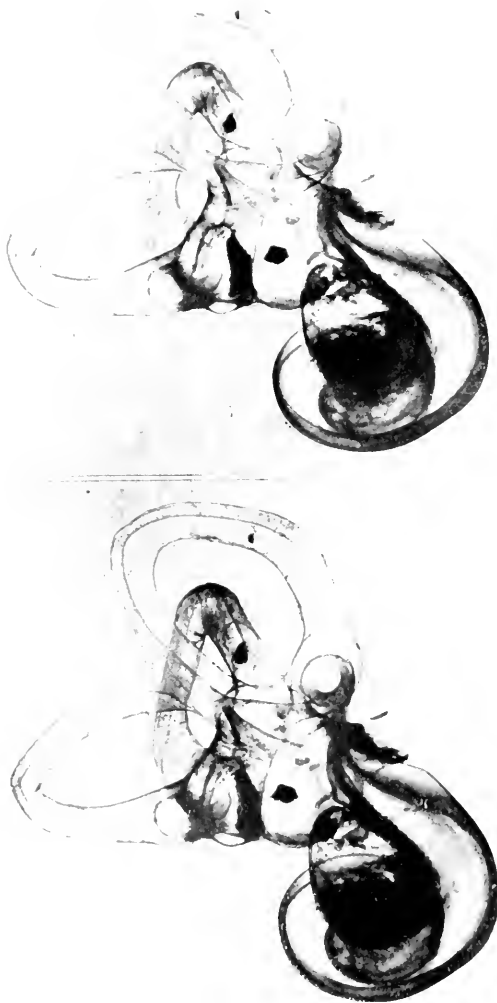
It is obvious that one of the difficulties encountered is to get the material, and a still greater difficulty is to get material from subjects in whom a clinical examination of the labyrinthine functions has been made during life. For example, the four cases of which I have had the opportunity of examining the temporal bones were very kindly sent me by pathologists, and therefore they had no clinical records so far as the deaf-mutism is concerned. Physicians and surgeons of hospitals might lend valuable assistance in this, as in other branches of aural pathology, if they would have a thorough examination of the hearing made in all cases of deafness which are admitted to their wards.

Before proceeding to describe the pathological changes found in the cases which I have examined, I would first of all like to say a word or two about the conditions described by previous observers as well as to make a brief statement in regard to the method of making these examinations.

In some cases an actual arrest of development of the whole organ of hearing has been recorded, the outer, middle, and inner ear all being affected. Such cases, however, are very rare. In a larger percentage of cases the middle ear has been affected either in respect to mal-development, or as a result of suppurative processes. Thus the stapedia joint has been found to be ankylosed, the round window narrowed, and the membrane of that window thickened. But in by far the largest number of cases the inner ear had either suffered alone or was the seat of the most pronounced disorganisation. The most noticeable changes found in this portion of the organ of hearing were atrophy and degeneration of the organ of Corti, and of the nerve-fibres supplying it, and of the cells of the ganglion spirale. The nerve fibres supplying the vestibule and ampulla of the canals were sometimes degenerated and sometimes not. A very common feature was depression of the membrane of Reissner, so that it comes to lie very close to, or in actual contact with, the remains of the organ of Corti, and is frequently adherent to the latter. In a few cases the stria vascularis was found to be quite altered in character, in a way to be described later.

As regards the method of preparation for microscopical examination of these cases, it will be found by experience that the celloidin method of embedding is much to be preferred to the paraffin method. It is doubtless true that thinner sections can be obtained by the paraffin method, but on the other hand, damage to some of the structures is far more apt to occur. Thus it is almost

FIG. 1.



TO ILLUSTRATE DR. ALBERT A. GRAY'S CONTRIBUTION TO THE STUDY OF THE
PATHOLOGICAL ANATOMY OF DEAF-MUTISM.

impossible to obtain a section by this method showing the membrane of Reissner in its true position. The drawbacks to the microscopic examination of the labyrinth, whether the celloidin or paraffin method be used, is that the use of the acid for decalcification destroys any calcareous deposits that may be present in the labyrinth; and secondly, that we are unable to tell the size of the organ. As will be seen later, the latter is a particularly serious objection. Both these difficulties may be surmounted by employing my own method of preparation, but the objection, of course, to this method is that it is not possible to study the finer microscopical details by its means. Perhaps the best plan to follow is to prepare the organ from one side for examination by the microscope and the other by my method. When, however, the temporal bone of one side only is obtained the method of microscopical investigation is to be preferred.

During the past eight years I have had the opportunity of examining the temporal bones from four cases of deaf-mutism. In two cases the bones from both sides were sent, while in the other two cases the bones from one side only were available. The material was supplied by Professor Sutherland, of Dundee, by Dr. Anderson, of the Victoria Infirmary, Glasgow, and by Professor Teacher, of the Royal Infirmary, Glasgow. To these gentlemen I take this opportunity of expressing my gratitude for their kind trouble.

CASE 1.—In the first case, a deaf-mute aged thirty-two, the temporal bone of one side only was obtained. The outer and middle ear showed no evidence of pathological changes, either present or past. There was no ankylosis of any of the ossicular joints.

Being at the time particularly interested in the microscopic appearances of the labyrinth, I prepared the organ by my own method. In outward appearance it presented a normal aspect, except in regard to its size, to which reference will be made later. The endolymph space in the canals bore the normal relationship to the perilymph space, and there was no sign of collapse of the membranous wall anywhere. So far as could be seen the same was true of the vestibule. The size of the organ was the only noticeable abnormality. It measured 19.25 mm. in its greatest length, which is 2 mm. above that of the average normal adult labyrinth, and 1.25 mm. above that of the largest normal adult labyrinth which I have had the opportunity of examining. It is 3.05 mm. larger than that of the labyrinth of the newly born

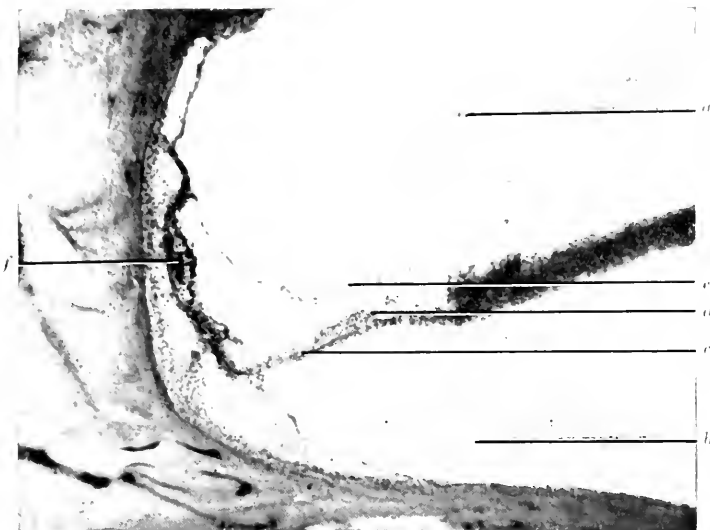
child as estimated by Alexander. The other measurements will be referred to later (see table).

CASE 2.—In the second case to be recorded both temporal bones were obtained. The subject was a deaf-mute aged eleven. On the *left* side the outer and middle ear were found to be normal, except for the fact that the latter cavity was perhaps rather smaller than would be expected for the time of life. The ossicles were quite normal in shape, and there was no ankylosis of any of the ossicular joints. The tensor tympani was not atrophied as shown by microscopic examination. The labyrinth was prepared macroscopically. As in the first case, no abnormality in shape beyond the size of the organ was discoverable on examination. The greatest length of the organ was 19 mm., that is, 1.75 mm. above the normal average and 0.75 mm. above the maximum normal hitherto found. Deposits of calcareous salts were present in both the utricle and saccule (Fig. 1).

In the *right* ear, as in the left, the outer ear was normal; and except for its comparatively rather small size, the same may be said of the middle ear. One interesting fact, however, was found in which this case differed from the others. There was a firm fibrous ankylosis of the malleo-incudal articulation. It is of further interest to note that the processus gracilis of the hammer was present to a considerable extent, thus presenting an infantile type of the ossicle. There was no ankylosis of the stapedio-vestibular synostosis. The round window was normal.

The labyrinth on the right side was subjected to microscopic examination. The vessels of the bony capsules of the labyrinth were dilated. In the lowest whorl of the cochlea the membrane of Reissner was depressed and adherent to the organ of Corti, which was in a state of complete degeneration, none of the normal constituent cells being found. In the second whorl the membrane of Reissner was also depressed, but not to such a great extent as in the first whorl, neither was it actually adherent to the organ of Corti (Fig. 2). The organ of Corti, however, was in the same state of degeneration as in the first whorl. In the apical whorl the appearances were rather different. The membrane of Reissner was hardly at all depressed, but the organ of Corti still showed the same disorganised appearance. The most interesting feature in this whorl, however, was a remarkable development of the stria vascularis (Fig. 5). Instead of lying flush with the rest of the wall of the scala media the stria vascularis projected downwards as a tumour-like outgrowth, and almost reached the upper

FIG. 2.



a. Scala vestibuli. *b.* Scala tympani. *c.* Basilar membrane. *d.* Organ of Corti.
e. Membrane of Reissner (depressed). *f.* Stria vascularis.

FIG. 3.



TO ILLUSTRATE DR. ALBERT A. GRAY'S CONTRIBUTION TO THE STUDY OF THE
PATHOLOGICAL ANATOMY OF DEAF-MUTISM.

surface of the organ of Corti. This outgrowth does not consist merely of the products of inflammatory activity, for it consists of a core of connective tissue supporting a layer of cubical epithelial cells. Its probable significance will be referred to later. The ganglion spirale showed evidence of very marked degeneration, but some apparently normal ganglion-cells were still present. In the stem of the auditory nerve it was found that the fibres in the cochlear branch were, with comparatively few exceptions, in a state of complete degeneration. The facial, vestibular, and ampullary branches were normal.

CASE 3.—In the third case both temporal bones were removed from a deaf-mute aged nine, and were kindly forwarded to me. On the *right* side the outer and middle ears presented quite normal appearances. There was no sign of present or past disease, there was no ankylosis of any of the ossicular articulations, and the stapes was freely movable. On microscopic examination of the tensor tympani there was no sign of degeneration of the muscular fibres. The labyrinth was prepared for macroscopic examination. It was found to present a normal appearance except for the fact that it was larger than usual, measuring 19 mm. in its greatest length. There was no outward deformity in any of the parts. On the *left* side the outer and middle ear were normal, no ankylosis of the ossicular joints was found, and the stapes was freely movable in the oval window. The tensor tympani was subjected to microscopic examination and the muscle-fibres were found to be quite normal in appearance (Fig. 4). The cochlea on this, the left side, was examined by the microscope. The pathological changes were found to be very similar to those in Case 2 (Fig. 3). The organ of Corti was disorganised to such an extent that practically none of its elements were recognisable. The membrane of Reissner was depressed but was not adherent to the organ of Corti. No tectorial membrane was found. In the stria vascularis of the apical whorl there was found the same curious outgrowth as in Case 2, but in this case the growth was relatively a little larger and the tissue elements rather more completely differentiated (Fig. 6). That is to say the layer of cubical epithelial cells was more clearly demarcated from the connective-tissue core below, and the cubical cells themselves were more regular in outline. The ganglion spirale was degenerated and hardly a vestige of ganglion cells could be discovered. In the auditory nerve the cochlear portion had undergone almost complete degeneration (Fig. 7), while the facial, vestibular and ampullary branches appeared normal.

CASE 4.—In this case only one of the temporal bones was obtained from a deaf-mute subject of the age of nineteen. The outer and middle ear presented no noticeable departure from the normal, nor was there any evidence of past or present disease in these portions. There was no ankylosis of the ossicular joints and the stapes was freely movable in the oval window. The tensor tympani muscle was subjected to microscopic examination, and the muscle-fibres were found to be quite normal in appearance. The cochlea on this (the left) side was examined by the microscope. The organ was found to be very different from those of the previous cases, and, indeed, showed little if any departure from the normal. The membrane of Reissner was not depressed; the stria vascularis showed no sign of anatomical changes. The organ of Corti was not disorganised to any noticeable degree, but viewed as a whole the arch was slightly shallower than is normally the case. The tectorial membrane was somewhat depressed but otherwise was healthy. No departure from the normal was found in the ganglion spirale; and the cochlear and other branches of the auditory nerve were quite healthy.

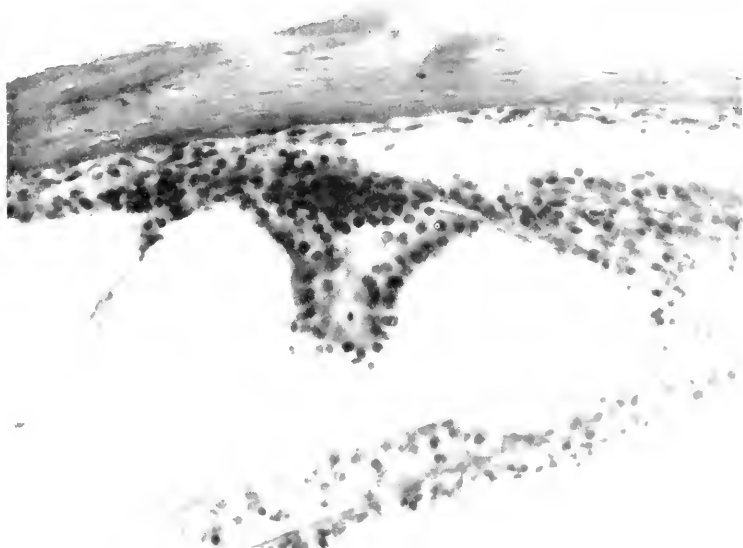
When the facts recorded above are co-ordinated and compared with those discovered by other observers, some interesting results are obtained. First, in respect to the outer and middle ear, it is noteworthy that no serious defect was found in any of the cases, for the slight deviation in size in the middle ear in Case 3 may quite well be within the limits of normal variation. It is not at all likely that it is to be accounted for on the theory of arrest of development from having never functioned, because in the first place the middle ear is only concerned in the transmission of sound, not the perception of it, and in this respect it could perfectly well carry on its function in spite of the fact that the cochlea was unable to fulfil its function of perception of sound. In the second place, the middle ear, though in this case rather smaller than the average, was not of the infantile type, but had clearly undergone development in the usual way, except in respect to one feature—the persistence for an abnormally long time of the *processus gracilis* of the hammer. Even this feature is just as readily explained by the fact that the hammer and anvil were ankylosed.

This condition of normal, or approximately normal appearance, of the middle ear in deaf-mutes is, on the whole, the most common, to judge from the records collected by Siehenmann, Denker, and others. But there are many exceptions to this rule, and in these cases the changes in the middle ear may be of the nature either of

FIG. 4.



FIG. 5.



TO ILLUSTRATE DR. ALBERT A. GRAY'S CONTRIBUTION TO THE STUDY OF THE
PATHOLOGICAL ANATOMY OF DEAF-MUTISM.

arrested development or the result of past or present inflammatory activity.

The condition of the tensor tympani muscle is very interesting. In all the cases examined by myself the muscle-fibres presented a normal healthy appearance, as described above. In the records of other workers the condition of this muscle is, so far as I have been able to find, not recorded, except in the case described by Denker.¹ In this case the muscle was atrophied. The discrepancy between Denker's finding and my own is, on consideration, not difficult of explanation. The normal stimulus to contraction of the muscle is sound, perceived by the cochlea and transmitted by the auditory nerve to the nuclei in the central nervous system. Now many deaf-mutes have a certain amount of hearing power left, while others have none. In the former, therefore, the tensor tympani may be saved from atrophy, because the reflex path is not completely interrupted. In the latter the path is completely interrupted and the muscle will consequently atrophy from want of use.

Turning our attention to the inner ear, it will be noticed that the most salient features of two out of the three specimens examined microscopically were: the disorganised condition of the organ of Corti, the depression of the membrane of Reissner, the curious development of the stria vascularis in the upper portion of the cochlea, and the degeneration of the nerve-elements of the spiral ganglion and the cochlear portion of the auditory nerve. These are all in close agreement with the findings of previous observers. The disorganisation of the organ of Corti, the depression of the membrane of Reissner, and the atrophy of the nerve-elements are by far the commonest defect in deaf-mutism, and have been found by almost all observers; they need not, therefore, detain us at present. More rare is the remarkable development of the stria vascularis. The condition, however, has been previously described by Schwabach,² Alexander,³ and Görke.⁴ Its existence is difficult of explanation, and none of the investigators mentioned, so far as I am aware, have attempted to account for it. The condition certainly indicates something more than repair after inflammatory activity in post-natal life, such as is recognised by the pathologist. It may be, however, that it is indicative of a process of repair occurring during foetal life, when the tissues are capable of repair

¹ *Anf. d. deutsch. Otolog. Gesellsch.*, Lief. iv, Wiesbaden, 1907, J. F. Bergmann.

² Schwabach, *ibid.*, Lief. iv, S. 21.

³ Alexander, *ibid.*, Lief. ii.

⁴ Görke, *ibid.*, Lief. iii, p. 21.

of a kind far more complete than in post-natal life in respect to the differentiation of the cellular elements.

Case 4 is of considerable interest because of the fact that there was but little deviation from the normal anatomical appearance of the cochlea as examined under the microscope. This condition, so far as is at present known, is rare in deaf-mutism. Indeed, in all the records published I have only been able to find one similar case, which was described by Habermann.¹ The case occurred in a boy who was the subject of cretinism, and Habermann attributed the deafness to changes in the central nervous system.

Passing on to the consideration of the macroscopic appearances of the labyrinth of the deaf-mute we enter a region that has hitherto been unexplored.

In a paper in the *Journal of Anatomy and Physiology*, vol. xxxix, p. 349, the present writer gave the measurements of the various parts of the normal human labyrinth as found in four adult subjects, and also the means of these various measurements. Alexander² has given the measurements of the various parts in the new-born child. In three of the cases of deaf-mutism recorded in this paper the writer took the corresponding measurements of the labyrinth, and we are therefore in a position to compare the size of the various parts of the organ in the deaf-mute with those in the normal adult, and to a limited extent with those of the new-born child.

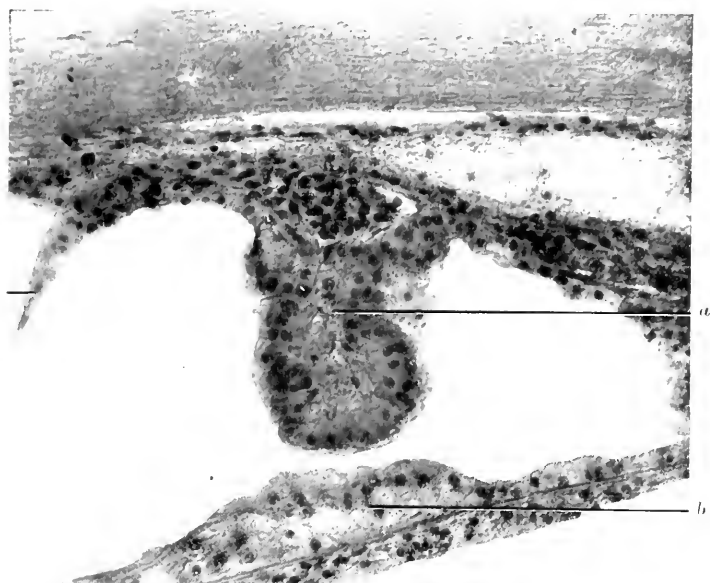
In the new-born child the labyrinth is smaller than in the adult, its maximum length being 16.20 mm., while that of the adult is on an average 17.25 mm., and as a maximum in the cases examined 18 mm.

Now it would naturally be expected that an organ whose function has been entirely abrogated in many cases and almost entirely in the remaining ones, either from birth or within five or six years thereafter, would be, in respect to size, of an infantile type. But in so far as the three cases examined are concerned such an assumption is proved to be quite incorrect. In all three cases the labyrinths were considerably larger than that of the average normal adult, and larger even than that of the maximum normal human labyrinth. It is to be noted, further, that of the three cases two occurred in children, aged nine and eleven respectively, and in these under normal circumstances the labyrinth would not be so large as in the adult.

¹ Habermann, "Siebent. Bericht. über d. neues Leistung, in d. Ohrenh.," p. 342, S. Hirzel, Leipzig, 1906.

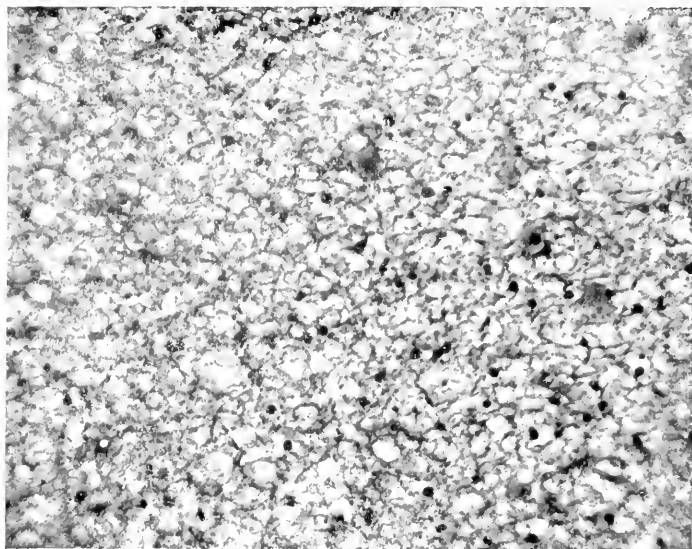
² Alexander, *Arbeit. aus. d. Anatom. Inst.*, Bd. xix S. 571.

FIG. 6.



a. Outgrowth from stria vascularis. *b.* Organ of Corti.

FIG. 7.



TO ILLUSTRATE DR. ALBERT A. GRAY'S CONTRIBUTION TO THE STUDY OF THE
PATHOLOGICAL ANATOMY OF DEAF-MUTISM.

This increase in the size of the labyrinth is not confined to any one portion, but, as will be seen from the accompanying table, applies to all the different parts in all three cases. There is in one case a single measurement, which forms an exception to this rule. In Case 3 the internal diameter between the limbs of the horizontal canal is 0.87 mm. less than normal.

Table of Measurements showing the Comparison in Size of the Different Parts of the Labyrinth in the Normal Condition and in the Deaf-mute.

	Newly born child.	Average adult.	Deaf-mute, Case 1.	Deaf-mute, Case 2.	Deaf-mute, Case 3.
Maximum length of the labyrinth	16.20 mm.*	17.25 mm.	19.25 mm.	19.00 mm.	19.00 mm.
Diameter of lowest whorl of cochlea at its widest	—	8.25 "	9.75 "	9.50 "	8.50 "
Diameter of second whorl of cochlea at its widest	—	4.62 "	5.75 "	5.50 "	5.25 "
Diameter of tube of cochlea just in front of round window	—	2.06 "	2.75 "	2.50 "	2.25 "
Diameter of vestibule above the oval window	—	3.50 "	5.50 "	5.50 "	5.50 "
Transverse diameter of superior canal from limb to limb (internal)	—	4.30 "	6.00 "	6.00 "	6.00 "
Transverse diameter of superior canal from limb to limb (external)	—	8.00 "	9.00 "	9.00 "	8.50 "
Height of vertex of superior canal above vestibule	—	4.30 "	6.00 "	6.00 "	5.75 "
Transverse diameter of posterior canal from limb to limb (internal)	—	4.02 "	5.00 "	5.00 "	5.00 "
Transverse diameter of posterior canal from limb to limb (external)	—	7.68 "	8.25 "	8.50 "	8.00 "
Height of vertex of posterior canal above vestibule	—	3.07 "	6.00 "	6.50 "	5.50 "
Transverse diameter of horizontal canal from limb to limb (internal)	—	2.56 "	3.25 "	3.25 "	3.00 "
Transverse diameter of horizontal canal from limb to limb (external)	—	6.87 "	8.50 "	8.00 "	6.00 "
Height of vertex of horizontal canal above vestibule	—	2.75 "	4.50 "	4.50 "	4.00 "
Length of the major axis of oval window	—	2.25 "	2.75 "	2.75 "	2.25 "

* This measurement is taken from Alexander's paper, *Arbeit, aus. d. anatom. Inst.*, Bd. xix, s. 571. The other measurements taken by Alexander were made from points different from those of the writer, and cannot, therefore, be compared with the latter in the table.

The causation of this increase in the size of the labyrinth in these three cases must be sought for. The possibility of having by mere coincidence met with three consecutive cases of particularly large labyrinths, happening by chance to occur in three deaf-mutes, especially when taken in consideration with the age of the

subjects, is out of the question. It appears to me that the most probable explanation of the facts is to be found in the occurrence of increased intra-labyrinthine pressure during foetal or very early post-natal life. At this period the capsule of the labyrinth is surrounded by a layer of cartilage which could yield to pressure in a way that the rigid, bony walls of adolescent and adult life could not. This explanation is supported by other facts. Thus the great frequency with which the membrane of Reissner is depressed, sometimes to such a great extent that it lies in contact with, and may become adherent to, the organ of Corti, is very naturally explained by the occurrence of abnormal pressure in the perilymph space, transmitted in some cases from the intra-cranial cavity through the aqueduct of the cochlea and in other arising from inflammatory activity within the labyrinth itself.

In some cases of deaf-mutism the evidence of increased intra-cranial, and consequently of increased intra-labyrinthine pressure, is more direct and does not admit of question. Such is the case when deaf-mutism is associated with hydrocephalus.

Such evidence as we have, therefore, indicates that the increased size of the labyrinth which is found in some deaf-mutes—and apparently a large percentage of them—is due to increased intra-labyrinthine pressure during foetal or early life. Indeed, on consideration, it is difficult to see how any other explanation can be given.

CASES OF ACQUIRED DEAF-MUTISM DUE TO CONGENITAL SYPHILIS.

By MACLEOD YEARSLEY, F.R.C.S.,

Senior Surgeon to the Royal Ear Hospital; Medical Inspector of
L.C.C. Deaf Schools, etc.

(*Concluded from p. 187.*)

Ears.—One girl showed a supernumerary auricle on the right side, one girl and one boy had ceruminous accumulations on one side, and two boys had such plugs on both sides.

As regards the membrana tympani and tympanic cavities the results of examination were as follows: The membranes were thickened and indrawn on both sides in ten cases—five boys and five girls; they were merely indrawn in two boys. One boy had the R. Mt. normal and the L. Mt. thickened and indrawn, and one girl had the R. Mt. thickened and indrawn and the L. Mt.

indrawn and atrophic. In two boys one Mt. was thickened and indrawn, the other being perforated and the middle ear discharging, and in one boy both Mt. were thickened and showed small dry perforations.

As regards the mobility of the mallei, movement to the pneumatic speculum was normal on both sides in five boys and six girls. Mobility was impaired on both sides in one boy, and on one side (other side mobile) in one girl. The mallei were fixed on both sides in one boy and one girl (the latter, Case XII, showed the R. Mt. thick, fleshy-looking, and indrawn, both membrane and mallens being firmly fixed), and in two boys the malleus was fixed on one side and mobile on the other.

Although the most important antral complication in inherited syphilis is that affecting the internal ear, it is well known that catarrhal and suppurative inflammations occur. The seventeen cases under consideration show how frequently these middle-ear complications may be met with, and it is interesting to note that in one case only (VI) was a normal membrane found.

Nose.—Nothing of note was to be found in five boys and six girls. The septum was deflected in three boys, and in one of these there was hypertrophy of the middle and inferior turbinals with adhesions between the septum and inferior turbinal on the right side. Adenoids had been removed in two cases—one boy and one girl.

Throat.—Nothing noteworthy was found in five boys and three girls. The tonsils were enlarged in six cases (three boys and three girls). Two boys showed hypertrophic pharyngitis, and one boy showed scarring of soft palate and fauces from old ulceration, and in one girl and one boy the soft palate only was scarred.

One case (XVII), in which the nose was practically disorganised (a girl), is not included in the foregoing two paragraphs. She showed cicatrices at the root of the nose through which both nasal bones had been removed as sequestra. The interior of the nares was unrecognisable, the septum having disappeared, and slightly thickened ridges on either side being all that remained of the middle and inferior turbinals. The cavity had to be cleared of thick crusts before the condition could be examined. Her soft palate was much scarred, the uvula being absent, and the right tonsil, posterior faucial pillar and salpingo-pharyngeal fold were welded together in one mass.

Functional Examination.—The testing of the hearing was carried out with the bell, voice, Edelmann-Galton whistle, and tuning-

forks. The bell of the large deaf-mute pattern figured by Kerr Love (with the clapper attached by a spring outside) was used only for those cases who could not hear the voice. The tuning-forks used were a Lucæ's C(128) and a series ranging from 3C16 to C⁴. The bone-conduction and air-perception were tested, Weber's reaction noted, and Rinne's reaction taken for C and C². There is always some difficulty in obtaining reliable information as to the bone-conduction with very deaf children, as they vary much in their ability to distinguish between feeling the vibrations and hearing the sound. This is sometimes a matter of difficulty in testing deaf adults, and is increased in testing children.

Although the results of functional examination have already been given in the summary recorded above, it is better for purposes of comparison to display them in the following table as well.

It will be seen that Cases III and XII were totally deaf, giving no response to any test and having even no bone-conduction remaining, whilst Cases I and XVII were in the same plight, save for a small remnant of osseous perception to the C(128) fork. Case V was also totally deaf except for a little bone-conduction and slight air-perception for C³. Case XV, quite deaf to the voice, could hear the bell at 4 ft., had some remaining bone-conduction and air-perception for four forks on one side and two on the other.

As regards hearing for the voice, in every case that for the whisper was *nil*, whilst in one instance only was the spoken voice heard on both sides. Five other cases had a little hearing (from 1 ft. to close to the ear) remaining on the left side, and five had 2 in. to hearing for loud vowels close to the ear on the right side. Judging by the other cases, even this small amount of voice-hearing will probably disappear.

The whistle was heard on both sides in only three cases, in all of which it was considerably reduced, showing the great loss of high tones characteristic of internal ear deafness. Of the remaining cases six were unable to hear the lowest note of the whistle on either side, five could hear a note of variable tone on one side, and three were found, on repeated testing, to be quite unreliable as to result. It will be noted that Case IX could hear on one side a note of 5524.15 double vibrations. This boy had complete nerve deafness on the opposite side, but could hear loud vowels on the same side. His loss of bone-conduction was only — 15" on the hearing side, and his deafness in that ear was due to middle-ear changes, both membranes being thickened and indrawn and the mallei fixed. Case VI, the only one who showed a normal membrane (on which

Test.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.
Bell	(R.	0	0	0	0	0	—	—	—	0	—	0	—	0	4 ft.	—	0
	(L.	0	—	0	0	—	—	0	0	—	0	0	0	—	4 ft.	0	0
Spoken voice	(R.	0	0	0	0	0	3 ft.	Load 2 in.	Load vowel close	0	Close	0	Close	0	0	Raised 4 in.	0
	(L.	0	Close	0	1 ft.	0	6 in.	0	0	3 in.	0	0	0	2 in.	0	0	0
Whisper	(R.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	(L.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Edelmann whistle	(R.	0	Unrel.	0	1104830	0	Unrel.	6860	552435	1240131	1104831	0	0	0	0	6860	0
	(L.	0	Unrel.	0	2480262	0	Unrel.	12000 ?	0	17000	0	0	552435	0	0	0	0
Weber	(R.	—	—	—	—	—	Pos.	—	Pos.	—	—	—	Unreliable	—	—	Pos.	—
	(L.	—	—	—	—	—	—	—	—	Pos.	—	—	Unreliable	—	—	—	—
Rinne	(R.	Double neg.	Double neg.	Double neg.	Double neg.	Double neg.	Pos.	?	?	Pos.	Double neg.	Double neg.	Double neg.	Double neg.	?	Double neg.	—
	(L.	Double neg.	Double neg.	Double neg.	Double neg.	Double neg.	Double neg.	?	?	Pos.	Double neg.	Double neg.	Double neg.	Double neg.	?	Double neg.	—
Bone-conduction	(R.	—34"	—25"	0	—30"	—32"	> -20"	Diminished	—15"	—32"	neg. -21"	0	> -30"	> -20"	—27"	?	—14"
	(L.	—20"	—20"	0	—22"	—20"	> -16"	Diminished	—29"	—25"	—31"	0	—40"	—31"	—38"	?	—42"
Air-perception	(R.	Unrel.	Unrel.	0	C, C ¹ , C ²	C ³	0	1064 C, C ²	C to C ¹	2032 to C ¹	C to C ¹	0	C ¹ , C ²	C ¹ , C ²	1064 C ¹ , C ²	C ¹ , C ²	0
	(L.	Unrel.	Unrel.	0	C ³	C ³	C to C ¹	C to C ¹	0	2032 to C ¹	C ³	0	C ¹ to C ²	C ¹ to C ²	1064 C ¹	0	0

side he could hear the voice at 6 in.), gave unreliable results, both as to the whistle and bone-conduction; the impression I gained from repeatedly testing him was that, on that side at any rate, he had no hearing for the whistle at all.

Weber's test, which I have long come to consider as practically useless except in cases of unilateral deafness, gave undoubted results in only four cases.

Rinne's reaction was doubtful in three of the cases in which it could be applied, was positive on one side in one case, on both sides in one case, and was negative to both C and C² forks in seven cases on both sides and in one case on one side. Considering the middle-ear changes from which most of these children suffered this was to be expected.

Bone-conduction, as I have said, is extremely difficult to gauge with any reliable result in very deaf children. In two cases its total absence was beyond doubt. In every instance the test was repeated several times in order that accuracy might at least be approached, and those in whom much variation was found were entered as merely "diminished" or "unreliable." The figures seen in the table must, therefore, be taken as approximately correct only.

The air-perception was examined by the series of forks above mentioned. This test was fairly easy of application, and it was found that by sometimes making a pretence only of striking the forks, a child who was not giving accurate responses could be detected. Air-perception for any fork was totally absent on both sides in three cases, on one side in three others. The test gave unreliable results in three more. It showed islands of hearing in five cases, and, owing to the middle-ear conditions existing, was characterised by reductions in the lower tone limit.

Tinnitus.—Although in every case careful inquiry was made for the presence of subjective noises, in only two instances could their past or present existence be elicited. Case I had "drumming" noises, and Case XV gave a history of "humming" at the age of eight to nine years; she still had slight tinnitus, which she stated to be "like music."

These cases form part of an examination of 500 deaf children, and I have made particular inquiries as to tinnitus in all of them, but out of the total number I have only been able to discover three other instances (making five in all). The cause of this apparent rarity no doubt lies in the difficulty of making the deaf child understand the aim of one's questions, coupled with the inability he

experiences in expressing his sensations. I do not think that this difficulty is confined to the deaf-mute, for it is not uncommon in child patients suffering from slighter degrees of deafness.

In no case could I obtain any history of *vertigo*, and in no case was I able to make any investigation into the condition of the vestibular apparatus beyond Romberg's sign and the various co-ordinated movements of walking, jumping, etc., all of which were negative in their results.

Speech, as is to be expected, was natural in fourteen of these cases, and in only one of them was it "deaf" in tone. In the remaining three, two of whom (XII, XVII) were totally deaf and one (IX) had only loud vowel hearing on one side, it had sufficiently deteriorated as to merit classification as "rests of speech"; in only one of these (XVII) had these "rests" become partially lost, but in her case four years of total deafness with almost total blindness has caused her to depend so much upon finger-spelling as to lead to her abandoning speech as a method of communication, in spite of the fact that every method is made to force her to continue to speak.

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THE FRENCH OTO-RHINO-LARYNGOLOGICAL SOCIETY holds its next Congress in Paris from May 9 to 12, 1910, under the presidency of Dr. Mahu. A very interesting programme has been issued, and two important discussions are to be held. One, on "The Indications for and the Results of Broncho-œsophagoscopy," is to be opened by Drs. Guisez and Philip, and the other, on "Isolated Osteitis and Periostitis of the Temporal Bone," by Drs. Jacques and Gault.

TUBERCULOUS DISEASE OF THE TRACHEA LEADING TO CARTILAGE NECROSIS AND INVOLVING THE THYROID GLAND.

By THOMAS GUTHRIE, M.A., M.B., B.C.(CANTAB.), F.R.C.S.(ENG.).
Aurist and Laryngologist, Victoria Central Hospital, Liscard; Assistant in Throat
Department, Royal Infirmary, Liverpool.

TUBERCULOUS disease of the trachea is described in Heymann's "Handbuch der Laryngologie und Rhinologie" as occurring in three forms:

(1) A general infiltration of the mucosa without ulceration, but causing much narrowing, as in the remarkable case reported by Heinze ("Kehlkopfschwindsucht," Leipzig, 1897), in which the lumen was reduced to the diameter of a lead pencil.

(2) Deep solitary ulcers sometimes accompanied by cartilage necrosis.

(3) Superficial multiple ulcers of large area tending to become confluent.

It is but seldom, however, that tracheal disease plays a part of more than secondary importance in the course of pulmonary and laryngeal phthisis. Both for this reason and on account of certain unique features the following case seems worthy of record.

The patient was a man, aged thirty-four, holding a post in one of the public services. In the autumn of the year 1908 he developed pulmonary tuberculosis and was invalided home from Malta on that account. He was placed under the care of Dr. Wilson at the Pendyffryn Sanatorium, Penmaenmawr. He was first seen by Dr. J. Middlemass Hunt and the writer on January 5, 1909, after he had been resident in the sanatorium for about two months. During this time the condition of the lungs had greatly improved; tubercle bacilli, which were formerly present, had disappeared from the sputum, and physical signs of disease were practically absent. During the same period, however, there had been noticed an increasing tendency to shortness of breath on exertion, while the respiration had at times been noisy. There had, in addition, been one or two attacks of real respiratory difficulty. At this date the voice was almost unaltered, but slight respiratory stridor was to be detected even with the patient at rest.

On examination with the laryngeal mirror the vocal cords and supra-glottic portion of the larynx showed nothing abnormal. About half an inch below the glottis a large part of the lumen was

occupied by what appeared to be a mass of growth. The mass was situated anteriorly, and had a broad base extending a considerable distance backwards on the right side and slightly across the mid-line to the left. From its free surface a somewhat pedunculated excrescence projected backwards into the lumen. It did not move with the respiratory current. The colour of the mass was a pale grey and the surface smooth. The movements of the vocal cords and arytenoids were unimpaired.

On January 7, in view of the definite degree of respiratory obstruction, tracheotomy was performed under local anaesthesia.

On exposure the isthmus of the thyroid gland appeared to be infiltrated with new growth. It was of a yellowish-white colour and a firm consistency, and was very adherent to the trachea. Both above and below there was much matting of the pre-tracheal tissues. After division of the isthmus it was found that erosion of portions of the first and second tracheal rings had taken place, and that at this point an opening led through a mass of "growth" into the lumen of the upper end of the trachea. Portions of the mass within the trachea and of the diseased thyroid isthmus having been removed for microscopic examination a tracheotomy tube was inserted below the level of the isthmus. Dr. E. E. Glynn, to whom the specimens were referred, reported that the material from both situations showed well-marked tuberculous changes. Numerous giant-cells and a large amount of fibrous tissue were present, and the appearances were such as to indicate a very chronic type of the disease.

In view of the absence of bacilli from the sputum, the quiescent state of the pulmonary disease, and the patient's good general health, it was considered advisable to attempt removal of the laryngeal and tracheal disease. Accordingly on January 11, under chloroform anaesthesia, the cricoid cartilage, the crico-thyroid membrane, and the lower portion of the thyroid cartilage were split in the mid-line. The tuberculous mass was then found to be attached above by a broad base to the anterior and right lateral walls of the larynx at the level of the cricoid cartilage and to extend downwards to the level of the upper border of the third tracheal ring. A large portion—nearly one half—of the first tracheal cartilage was found lying loose in the mass of tuberculous granulation-tissue, and the same was true of a smaller part of the second ring. All the diseased tissue both within and without the larynx and trachea was removed as thoroughly as possible, the raw surfaces were scraped with a sharp spoon, and pure lactic acid was rubbed

in. The lumen was then packed with iodoform gauze down to the level of the tracheotomy tube.

After this operation the patient at first made good progress. The tracheotomy tube was removed on the third day, and towards the end of January the patient returned to the sanatorium.

About the beginning of April he had an attack of influenza, during which he lost $1\frac{1}{2}$ lb. in weight, and when seen on April 14 reported that the breathing had of late become gradually more difficult. Even when at rest there was now slight stridor. No return of the disease could be seen with the laryngoscope, but the respiratory obstruction was obviously due to constriction following the loss of so large a part of the first and second tracheal rings. The greater part of the neck-wound was firmly healed, but a small aperture still remained, through which air was forced on coughing or forced expiration. It was considered advisable to replace the tracheotomy tube, and this was done under local anaesthesia.

When the patient was last seen (about six months ago) there was no evidence of a return of the tracheal disease. There were, however, signs of some recrudescence of the pulmonary trouble, there had been a further slight loss of weight, and the general condition was not very satisfactory. Any attempt, therefore, to overcome the tracheal stricture and so dispense with the tracheotomy tube was out of the question.

So far as he has been able to examine the literature of the subject, the writer has been unable to find a record of any case in which tuberculous disease led to necrosis of large portions of the tracheal cartilages, and, after perforating the trachea, invaded the thyroid gland.

PARESIS OF THE THIRD NERVE AND DISEASE OF THE SPHENOIDAL SINUS.

By C. ZIEM,
Danzig.

THE diagnosis and improved treatment of diseases of the sphenoidal cavity have been developed within recent times. Rouge (1871), Russell (1878), Raymond (1886), and others (1) had previously proved by *post-mortem* examinations the association of visual disturbances with suppurations in the nose and sinuses, especially the sphenoidal sinus. Further, in the clinic of my former chief, Dr.

Adolf Weber, of Darmstadt, as early as 1877 Countess Y—— was treated for bilateral atrophy of the optic nerve, due, probably, to fœtid suppuration of the nose. I have likewise seen the same association diagnosed, in May, 1878, at Prague, by E. Zaufal and the celebrated oculist, J. von Hasner (2). But the credit certainly belongs to E. Berger, of Paris, formerly Privatdozent of Ophthalmology in the University of Gratz (Austria), of having directed, by his clinical, anatomical, and bibliographical researches (3), the attention of numerous specialists to the important relations of sphenoidal diseases to the optic nerve; in doing so he long anticipated Onodi. These relations, however, should not be overestimated. For I myself proved only after a period of personal experience—and I believe that I was the first to do so—that contraction of the field of vision is often dependent, not upon inflammation of the optic nerve itself, nor upon *retro*-bulbar affections, but much more frequently upon *intra*-ocular affections (4), namely, the dilatability and erectility of the choroid membrane, and, according to J. v. Gerlach, the extreme vascularity of the ciliary plexus (Zinn [1780], A. Weber [5], Ziem [6]), damaging by circulatory disturbance the function of the pigmentary layer, and secondarily that of the retina itself (7). On the other hand, in Berger's sphenoidal syndrome, which is extremely variable according to Frémont, of Caen (8), and Guisez, of Paris (9), and is composed, as regards the eye, of epiphora, photophobia, blepharospasm, tenderness on pressing the eyeball backwards, contraction of the field of vision, amblyopia, and amaurosis. One symptom is not infrequently missing, viz., paresis of the external rectus or of the third nerve, at a time when, as in thrombosis of the cavernous sinus or in sphenoidal tumours, exophthalmos or total ophthalmoplegia is not yet present. In the above-mentioned case of Rouge, however, strabismus divergens was noticed, and in the observation of Thirollox and Pasquier (1892), double vision (10). Cases of this kind have also been published by Schech (11), Höffmann (12), de Lapersonne, Lermoyez, and Stanculeanu (13), Thompson of Cincinnati (14), Bruns and King of New Orleans (15), and others. I myself have recently seen a similar case, which may be interesting for several reasons.

Paul Z——, aged thirty-five, consulted me on March 30, 1908, for visual disturbance of his left eye and vertigo, due to his having been engaged with some comrades in driving piles by means of a heavy iron block, which was hoisted twenty metres and then allowed to fall. During this occupation he had had to look up and down

by turns frequently. Paresis of the left oculo-motor was present, with images crossed and convergent upwards, the lateral distance of which increased towards the right side, and the difference in altitude and the obliquity increased on looking upwards. Absolute repose of the eye; in addition, for supra-orbital and frontal pain and obstruction of the left nostril—due to some hypertrophy of the inferior turbinated body—nasal, retro-nasal, frontal, and ethmoidal douches of salt water by means of the force-pump. As early as April 29, 1908, after ten douches, complete recovery, no more vertigo, no double vision.

He returned June 15, 1908, for recurrent squint, attributable, perhaps, to alcohol. He worked on, however, till November 13, having been engaged in digging canals and casting the earth dug out 2.5 metres upwards, overworking, also, his eyes by looking alternately and rapidly up and down. Lateral distance of the double images now at 4 metres, and on looking straight forward = 12 cm. When reading he closes the left eye. Eyelid not drooping. No complaint of blinding. Vertigo, especially when mounting the staircase of his second-floor lodging. Supra-orbital and frontal pain, shivering fits, anorexia, and thirst—in short, symptoms of influenza. Vision impaired to the right and to the left, due to opacities of the vitreous. Obstruction of the nose, especially on the left side, with considerable hypertrophy of inferior turbinated body. In spite of douches, sudorific remedies, leeches at the root of the nose, vesicatories in the retro-auricular (retro-lobular) region, iodide of sodium and malt, there was almost no improvement in the double vision or central vision, which was reduced finally to $\frac{4}{60}$ ($\frac{4}{36}$), and was aggravated by two faradic applications at the inner canthus and over the retro-auricular region. Fortunately, about the middle of March, 1909, I chanced to ask as to the condition of his lodging, and learned with astonishment that he had occupied, since October 1, 1908, a most unhealthy, and even mouldy, one. Removal not being practicable before March 25, the patient was ordered in the meantime to walk in the open air for hours together. As early as April 1 vision was improved and the distance of the double images, laterally and upwards, much diminished. Complete recovery was established by April 13, with normal vision; amplitude of accommodation to the right = 4.0 dioptries, to the left = 4.5 dioptries. No diplopia, no mydriasis, no anomalies of the media or the fundus. The nose free. *Status idem*, July 16.

Now, it is certainly astonishing that the first attack of paralysis

of the left oculo-motor disappeared so rapidly—viz. within a single month, whereas the third attack remained nearly unchanged from November 13 to the middle of March, 1909, although the injurious influence producing the last attack was slighter than that exciting the first—*i. e.* the conditions were more harmful for the eyes in ramming in piles than in throwing upwards earth dug out. The quick recovery from the first attack was undoubtedly favoured by the patient's inhabiting at that time a more healthy lodging than in November. The harmful influence of bad air, not only on an arm which has suffered from fire, as in the case of Oliver Goldsmith (Chapter XXVIII), but also in developing or aggravating nasal diseases, has repeatedly been insisted upon by me (16). Two years ago I took the liberty of recommending, instead of resections of walls of sinuses which have been performed by certain authors too frequently and too extensively, resections of walls or floors of mouldy dwellings (17). With C. Posey, Chr. Holmes, Logan Turner, and others, I am of opinion that swelling of the left nasal mucosa, after being present for a certain period, is continued backwards to the mucosa of the sphenoidal sinus, where, by means of the numerous contiguous venous plexuses (18) the left ocular motor, running for a certain distance *close to* the lateral wall of the sinus (19) and already congested by overwork, becomes involved. Immunity of the right motor oculi here is probably to be explained (1) by the absence of a swelling of the right nasal mucosa, (2) by the fact of frequent *asymmetric* development and varying extension of the two sphenoidal sinuses in the same head, as has been demonstrated by horizontal and vertical sections by Zuckerkandl (20), Merkel (21), B. Frankel (22), Jaques (23), Toldt (24), Onodi (25), Turner (26), and others, and by topographic projections published by H. W. Loeb and Miss Hamilton of St. Louis (27), so that in cases of this kind the motor oculi of one side may by venous stasis more easily be involved than that of the other side.

Oculo-motor paralysis is not a frequent affection, and in the "Annual Reports of the Eye, Ear, Nose and Throat Hospital of New Orleans," 1900 to 1908, sent me by the kindness of Drs. de Roaldes and King, in 963 patients in the eye department only 15 cases of this kind (0.08 per cent.) were observed, and in only one case (1907) was chronic maxillary empyema found associated with orbital involvement and paresis of the third nerve. The late renowned oculist, A. Mooren, of Dusseldorf, in 108,000 patients noted 139 cases of oculo-motor paresis, that is, 0.12 per cent. He mentions especially the case of a young lady suffering from neuritis optica,

oculo-motor paresis and "scrofulous" periostitis basilaris, who was not cured or even much relieved (28). It seems probable, however, that conjoint and steady attention to ocular and nasal diseases will in future assure to a greater proportion of sufferers of this kind full recovery from an apparently hopeless paralysis, and that the ominous term "never returned" will gradually vanish from the statistics. It is likely, too, that constant attention to ocular and sphenoidal diseases will benefit our patients in a great proportion of cases of recurrent paralysis of the oculo-motor, attributable according to L. Nauthner (29) and Schmidt-Rimpler (30) to a basal rather than a nuclear factor. The statement which I ventured to make twenty years ago, that the greatest progress in ophthalmology is to be expected from the study of nasal diseases and their intimate relationship with those of the eye (30), can no longer provoke, as John Locke said, "a terrible charge or an outcry amongst those who judge of men's heads as they do of their perukes, by the fashion, and can allow none to be right than the received doctrines."

As to the treatment in my case resection of the inferior or middle turbinated body might have been performed but would have probably been useless while the musty smell was still present in the patient's habitation. It is with good reason that Professor Jacques, of Nancy, says: "Creusées dans l'épaisseur du massif facial, qu'elles minent en tout sens, les fosses nasales, avec leurs annexes, constituent un vaste système cavitaire, anfractueux, parcouru par l'air inspiré," a factor capable of compensating many fresh troubles or lesions in the forepart of the head, by the influence of healthy, not infected, air. The striking improvement after my patient's removal should certainly induce us in similar cases before undertaking an operation on the sphenoidal sinus which is not always free from danger (31), to provide for plenty of fresh air.

In aere salus is an excellent old proverb, and hours spent in the open air will, as John Lubbock states, tend to make our days long in the land.

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(16) Cf. ex. gr. my paper on "Scrofulous Diseases of the Eye," *Ann. of Otol.*, St. Louis, vol. xv, 1906, where p. 1128 from "high" is to be read "mouldy fillings of walls," instead of "modern walls."

(17) *Monats. f. Ohrenheilk.*, 1907, p. 327.

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(32) Cf. Schech, *l.c.*

Dr. TAPIA, of Madrid, recently invited Sir Felix Semon to pre-
side at the opening of a clinic for the treatment of diseases of
the throat, ear and nose, and, indeed, had put off the inaugural
ceremony until the arrival of Sir Felix and Lady Semon at Madrid,
on their tour round the world.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF
MEDICINE—LARYNGOLOGICAL SECTION.

Meeting on Friday, April 1, 1910, at 5 p.m.

DR. DUNDAS GRANT, *President, in the Chair.*

THE following cases and specimens were shown :

A CASE OF HEALED TUBERCULOUS LARYNGITIS, TREATED BY GALVANO-
PUNCTURE.

BY MR. HERBERT TILLEY.

The patient, a woman, aged twenty-seven, complained of "hoarseness," and was under sanatorium treatment for pulmonary tuberculosis. The left ventricular band was swollen, so that the corresponding vocal cord was invisible. Four deep punctures with the galvano-cautery brought about the present satisfactory condition.

DR. JOBSON HORNE feared that a certain tendency had recently become evident to exaggerate the benefits of the galvano-cautery treatment of laryngeal tuberculosis. As a fact the treatment resembled the submucous resection of the nasal septum; those cases yielded the best results which least required operation. There was one factor in the history of a case such as this which laryngologists were apt to forget, and that was Providence. These cases would get well without any aid from the laryngologist. He did not wish to doubt Mr. Tilley's observations, but he wished to take exception to the words he had used that the galvano-cautery had "brought about" the present condition.

DR. DAN MCKENZIE showed some cautery points he had devised to facilitate galvano-cautery puncture of the larynx.

MR. SCANES SPICER said that the results in this case had been very satisfactory. He supposed, in answer to some of Dr. Horne's remarks, that tuberculosis of the larynx should receive local treatment when it produced symptoms. The larynx in this case still showed some redness about the right cord, and the voice was still husky, but there was no longer any sign of tuberculous infiltration.

DR. DONELAN also congratulated Mr. Tilley upon the good results he had obtained. He had had several advanced cases under his care recently, and some he had cauterised as often as fifty or sixty times without, however, curing them. Perhaps he had not been bold enough in his applications because he had been afraid of the reaction that might ensue. But it really seemed as if the reaction that followed cauterising

the larynx in tuberculosis was less severe than what one might expect in a healthy larynx. He hoped to be able to show some cases at a later date.

MR. FITZGERALD POWELL asked whether the four deep punctures had all been made at the one sitting, and, if not, what intervals were allowed to elapse between the individual cauterisings.

DR. HORSFORD asked Mr. Tilley whether he allowed the condition of the lungs to influence him in deciding in what cases to use the cautery.

DR. WM. HILL wondered whether Mr. Tilley or any other member had ever applied the cautery superficially to ulcers on the vocal cord. He himself had tried doing so but the results had not been encouraging.

THE PRESIDENT said the old question of *post hoc* and *propter hoc* inevitably cropped up in regard to any new remedy; but those who could remember cases where the circumstances had been otherwise the same, but in which the present treatment had not been tried, would realise that the results obtained by its use were much better than those formerly obtained, and in very many cases much better than it seemed reasonable to expect. He certainly was in favour of galvano-caustic puncture rather than superficial burning, because there was a greater sclerotic effect. Superficial cauterisation of tubercular ulcers seemed to be beneficial, especially in relieving pain. The absence of reaction after galvano-caustic puncture was almost a revelation. He had often been deterred from using the galvano-cautery when the patient had been going rapidly downhill, because he feared to bring the treatment into discredit, but he was not quite sure that even in those cases its use might not have been beneficial.

MR. TILLEY, replying to Dr. Jobson Horne's criticisms, related the history of the case. Last spring the patient had been referred to him from a sanatorium, with the report that in spite of careful general treatment and the use of silence the voice had been getting worse, and pain in the throat had set in, although at the same time the pulmonary condition had been improving. On her first visit to him examination of the larynx revealed swelling of the left ventricular band which entirely concealed the anterior two thirds of the cord. The whole point of the case was that the local condition had been getting worse in spite of the general improvement. This fact, he thought, cut the ground from under Dr. Horne's criticisms. He had inserted the cautery point about half an inch into the swollen ventricular bands, at intervals of from two to three weeks, on four occasions, the general treatment being carried on in the meantime. Now the patient had gone back to her work as a teacher with her voice restored. Consequently he thought he might take a little credit to himself for the successful result. Regarding the pulmonary condition in these cases, he held that galvano-cautery treatment should not be adopted if the patient had an evening temperature with night-sweating and general deterioration of strength. Active local treatment was inadvisable when the general condition was bad. He had always held that this treatment should only be applied to selected cases.

INTRA-TRACHEAL AND EXTRA-TRACHEAL (TRACHEOTOMY WOUND) MASSES
OF PAPILLOMATA REMOVED FROM A PATIENT SHOWN AT LAST
MEETING.

By MR. HERBERT TILLEY.

The PRESIDENT asked if Mr. Tilley had been able to remove the tracheotomy tube.

Mr. TILLEY replied that he had been able to remove the tube after he had got rid of two large masses of growth, one in the larynx and the other in the trachea.

The PRESIDENT said he once had a case at the hospital, a child, from whose larynx he removed a papilloma, yet in whom dyspnoea persisted. He therefore did tracheotomy, and then found a large papillomatous mass in the trachea, the removal of which was followed by the restoration of normal breathing.

A VULSELLUM-CATCH FORCEPS FOR FIRMLY SECURING SUBMERGED TONSILS IN THE OPERATION FOR THEIR MORE EFFICIENT REMOVAL.

BY MR. HERBERT TILLEY.

The forceps were provided with a simple catch and were made without a scissors-handle so as to permit the tonsillotome being passed over them.

Dr. JOBSON HORNE showed the forceps which he preferred. They were not original but consisted of an old pattern of Army bullet-forceps. Their advantage over Mr. Tilley's forceps lay in the fact that their catch was more reliable. Moreover, it was advisable to have straight and not curved forceps. In a paper read at the British Medical Association meeting at Sheffield on behalf of Mr. Hardy Neil, of New Zealand, the same pattern as he used was advocated. At the same time he expressed condemnation of this mode of removing tonsils. In the hands of experts the method might be safe enough, but advocacy of this plan would lead people of little experience to adopt it, and they would be troubled with serious bleeding. Traction on the tonsil by forceps brought large vessels forward, and these, sliced through, bled to a dangerous extent.

Dr. DONELAN said that some twenty years ago an American surgeon, who had previously been assistant to Sir Morell Mackenzie at Golden Square, operating upon tonsils and using a vulsellum forceps, drew a large tonsillar artery into the field of operation and so caused serious hæmorrhage.

Mr. FITZGERALD POWELL said that sometimes the tonsillar artery was abnormally large.

Mr. CLAYTON FOX agreed with those who thought the teeth of the forceps too small. In his experience it was not necessary to free the tonsil from the anterior faucial pillar. Tonsillar forceps were not unattended with danger, unless in the hands of skilled experts.

Mr. STUART LOW regarded the method described as a return to an obsolete practice. Did Mr. Tilley propose it as a substitute for emucation?

Mr. SCANES SPICER considered the gripping part of the forceps to be too small.

Dr. WILLIAM HILL regretted that he had not brought his forceps. The gripping end of Mr. Tilley's was not, he thought, quite right, but the toothed part was perfect. He had had vulsellum tonsillar forceps made with a biting end like an eagle's claws. It took a good grip and did not tear away.

Dr. DAN MCKENZIE preferred an instrument with a row of small sharp teeth to one possessing teeth widely separated like an eagle's claws. It was important to avoid putting too much traction on the forceps, otherwise any forceps would tear out through the friable tonsillar tissue. He had hoped that the discussion would have included some opinions upon tonsil enucleation, a subject which had not yet been discussed by the Section, although abroad, particularly in America, it had been the topic of one or two interesting debates. He was sure that enucleation was widely practised in Britain, but had been surprised that no adequate public recognition of the operation had so far been made.

Mr. PETERS asked whether the tonsils were removed first of all by the tonsillotome.

The PRESIDENT said that one of the greatest advantages was that with this instrument one could pass the ring of the guillotine or snare over the tonsil more easily than if it had a handle.

Mr. HERBERT TILLEY could not help feeling that the objections raised to the forceps he had shown were founded upon ignorance. With regard to the question of bleeding, for example, the opinions expressed were inaccurate. Where did the bleeding, when it occurred, come from? The answer was, from the main tonsillar artery low down on the posterior faucial pillar. Thus if by his forceps the tonsil was pulled upwards and forwards, there was actually less likelihood of wounding this vessel. This instrument gripped the tonsil and did not let go, and, unlike eagle's claw teeth, did not tear through the tonsil.

A PORTION OF MUTTON-BONE REMOVED FROM THE RIGHT BRONCHUS OF A LADY IN WHOM IT HAD BEEN LODGED FOR TEN DAYS.

By MR. HERBERT TILLEY.

Her general symptoms were constant irritating cough, numerous râles over the right base of lung, and temperature 102° F. Removal under general anaesthesia.

TUBERCULOSIS OF LARYNX IN A GIRL AGED TWELVE.

By DR. G. C. CATHCART.

This case was brought to the hospital last week complaining of sore throat and numerous glands in the neck. Four years ago the child had had a diphtheritic throat, but the mother said the doctor had told her that it was "the wrong bacillus." On laryngological examination it was impossible to see the larynx on account of the intense tumefaction of the epiglottis.

Opinions were invited as to treatment in so young a case.

Dr. JOBSON HORNE thought the case a very remarkable one, but was not disposed to venture upon a diagnosis until information regarding the condition of the lungs and sputum was forthcoming.

Mr. FITZGERALD POWELL agreed that the case was interesting, and hoped that it would be shown again.

Mr. SCANES SPICER observed that the patient breathed wholly with the abdomen. If the disease was not tuberculosis he did not know what it was.

Mr. CLAYTON FOX agreed that the larynx looked like tuberculosis. He advised sanatorium treatment for six months to begin with.

Dr. HORSFORD remarked upon a thickening of the posterior wall of the pharynx, an appearance which suggested the possibility of the laryngeal condition being tertiary.

Dr. DONELAN agreed that it might be specific. He went on to condemn strongly those sanatoria where all examination of the larynx was neglected.

Dr. WM. HILL had seen perichondritis of the larynx in children following measles, etc., and ultimately clearing up. The appearances, like those in the present case, strongly resembled tuberculosis.

The PRESIDENT said he thought it looked like tuberculosis of a mitigated type. Cases were seen in which it was difficult to draw the line between lupus and tuberculosis. He would be sorry to have to be pinned down to a definite diagnosis in the case. He suggested trying the von Pirquet test with tuberculin.

Dr. CATHCART had seen the case for the first time ten days ago, and in the interval there had been an improvement in the larynx, the epiglottis being now much smaller. The sputum and lungs would be examined.

CASE OF EXTREME DEFLECTION OF TRIANGULAR CARTILAGE, WITH
CREST AND ADHESIONS, AND ANTERIOR PRICKLE-SHAPED SPUR,
TREATED BY SEPTAL FISSURE. (INSTRUMENTS SHOWN.)

BY DR. PEGLER.

Young man, aged nineteen, complained of recurring attacks of deafness, inability to breathe through left side of nose, constant cold-catching, and a disagreeable sniffing which annoyed both himself and his friends.

Examination showed very marked deflection of the septum with ascending crest to left, extending from a thorn-like spine in front to beyond the junction with the ethmoid plate posteriorly. The spur and anterior part of the crest were joined by adhesions to the inferior turbinal anteriorly, the atrophied condition of which still remained. A deep groove in right side of septum marked the angle of deflection. The right inferior turbinal was hypertrophied, but breathing was carried on fairly comfortably on that side.

Treatment consisted in sawing and spoke-shaving away the spur and crest under chloroform, followed by septal fissure with the author's fissure forceps, and, after right partial inferior turbinotomy, inserting a thick india-rubber splint. The septum was forced over by the finger after the incisions had been made, until the two cavities corresponded in capacity as they do now. The

splint was worn quite comfortably for one week. The deafness, sniffing, and a troublesome watery discharge from the right and free nostril ceased, and the breath-way was now perfect.

Dr. JOBSON HORNE asked what was meant by septal fissure. The operation as described seemed to be that of Moure.

Dr. J. C. POTTER pointed out that Moure's operation was confined to the cartilage while Dr. Pegler cut through the bone.

Mr. CLAYTON FOX did not think that Moure's operation could be regarded as stopping short of the bone.

Mr. SCANES SPICER remarked that the excellent result showed that the case had clearly been one suitable for Moure's operation. On the other hand, the submucous resection was better for those cases where the deflection was situated high up. In such deflections Moure's instruments could not be inserted.

Mr. STUART-LOW thought that if a submucous resection had been performed in this case the deep gutter on the right side would have been rectified, and a source of crust formation would have been removed.

The PRESIDENT said that however fond members might be of submucous resection, it was well to have it brought before their minds that there were other methods of treatment. He did not know why the present operation was not called Moure's, as its principle was due entirely to him.

Dr. PEGLER, in reply, agreed that the operation was Moure's. The modification he had introduced did not, of course, make any difference in principle. He had used the term "fissure" simply because it was expressive. Respecting the operation, in certain details it was new. He had gone further back than Moure did and had cut through the bone. He had abandoned Moure's splint as too large and uncomfortable. In angular cases he shaved down the prominence first of all and followed with Moure's procedure. Regarding the groove on the right side he had found that such grooves were not obliterated after the submucous resection. If crusts formed the mixture recommended by Lack, consisting of ungt. hydrarg. nit. in parolein and almond oil would soon cure them.

CASE OF TUBERCULOSIS OF NASAL SEPTUM (SHOWN IN 1909, NOW AFTER SECOND OPERATION). (WITH SECTION SHOWING TUBERCLE BACILLUS.)

BY DR. PEGLER.

The patient was a woman, aged fifty-six. The triangular cartilage was cut away in June last, and pure phenol applied to the margins of the fenestrum after free curettage. The present condition had existed for about seven months, and there was no sign of any further infection, local or general.

After being shown last time, some tissue was removed at St. Mary's Hospital; part was used for inoculating a guinea-pig, and part was cut for sections and stained for tubercle bacilli. In one slide a colony of acid-fast bacilli was discovered, so crowded that

Captain Douglas remarked they might have been mistaken for the leprosy organism. The guinea-pig became duly infected with enlarged glands and spleen, and having been killed after a month, a scattered bacillus was found here and there in sections of the spleen. In the tissues removed with the cartilage at the second operation upon the patient, a bacillus was discovered in one or two of the slides. She was now in excellent health.*

CASE OF MALFORMATION OF THE SOFT PALATE AND UVULA IN A GIRL
AGED SIXTEEN.

BY DR. DUNDAS GRANT.

There was a perforation above and to the right side of the base of the uvula, but the nature of it was quite undecided. There was no such cicatricial tissue as would accompany a specific perforation, and no history of such traumatism as could have accounted for it.

Dr. GRANT added that a history of an operation some ten years previously had been elicited.

Dr. DONELAN had seen a similar case in which the tonsil had been removed with a bistoury.

Dr. JOBSON HORNE had shown a similar case in which the uvula had been caught in a curette and torn. He had succeeded in treating it satisfactorily.

CURIOUS SEPTAL DEFLECTION IN A GIRL AGED ELEVEN.

BY DR. DONELAN.

The exhibitor asked whether operation should be undertaken now or later.

Mr. CLAYTON FOX thought the septal thickening might be accounted for in one of two ways. Either it was the result of a hæmatoma, the blood-clot having become organised into cartilage, or it arose from non-union of the mesial processes. Regarding operation, the thickened cartilage might be shaved off.

Mr. SCANES SPICER advised operation at once and not later.

Dr. DONELAN remarked that at a previous meeting Mr. Fitzgerald Powell had recommended the postponement of nasal resection in children until the age of fifteen years.

Mr. FITZGERALD POWELL agreed, and stated that the point had been thoroughly discussed at a previous meeting, when it was said that disfiguring and malformation occasionally followed the performance of the operation in childhood.

Dr. PEGLER thought that the drawbacks of the submucous resection in childhood could be overcome by performing the Moure operation.

Mr. WESTMACOTT had performed the submucous resection sixteen

times between the ages of nine and fourteen years of age, and no external deformity had resulted in any of them. The first case was operated on about five years ago.

Dr. DONELAN said he would remove just sufficient cartilage to clear the air-way in childhood.

LARGE COLLECTION OF MUCOUS POLYPI REMOVED FROM NOSE OF MAN
AGED FIFTY.

BY DR. DONELAN.

CASE OF REMOVAL OF THE HYPERTROPHIED ANTERIOR LIP OF THE
HIATUS SEMI-LUNARIS FOR LONG-STANDING CATARRH.

BY DR. DUNDAS GRANT.

The patient, a young woman, aged twenty-two, was first seen by the exhibitor in October, 1909, complaining of discharge from the nose of a muco-purulent nature, of eight years' duration; on account of this she was operated on for naso-pharyngeal adenoids. The discharge, however, kept gradually getting worse, and for the last year she had suffered from frontal headache, worse on the right side. There was tenderness on pressure at the upper and inner angle of the right orbit, and it was elicited that the headache became most marked soon after mid-day. There was hypertrophy of both middle turbinals, which were freely bathed in muco-pus, and there was a small polypus in the left middle meatus. On trans-illumination the various cavities were clear, except the right frontal sinus. The case was apparently one of muco-purulent catarrh of the ethmoidal cells, and possibly of the right frontal sinns. Dr. Grant at once removed the anterior part of the right middle turbinated body, and in a week's time the discharge in the right nostril had almost entirely disappeared. Attention was then turned towards the left nostril, and a small polypus in the middle meatus and the anterior part of the middle turbinated body were removed. The favourable result obtained on the right side was not repeated, and it was not until in January of this year he, Dr. Grant, thoroughly cut away the hypertrophied anterior lip of the hiatus semi-lunaris, that real improvement took place, and within a week after this was done the discharge was reduced almost to nothing.

Dr. WM. HILL asked how Dr. Grant explained the relief which followed the operation.

Mr. FITZGERALD POWELL asked if the middle turbinal was cellular.

Mr. HERBERT TILLEY said that removal of the anterior lip of the

uncinate process drained the antrum more than the ethmoidal cells. Many cases of so-called nasal or post-nasal catarrh were really cases of catarrh of the antrum or some other sinus, and were cured by draining the affected sinus.

The PRESIDENT, in reply, said the hypertrophied lip was interfering with the outflow from the anterior ethmoidal cells, and possibly from the frontal sinus. The patient had an intense running from the nose, very slightly tinged with pus. He would call it essentially a catarrh of the ethmoid cells. He did not deny that the ventilation of the antrum would be increased considerably by the removal of the hypertrophy, though the effect on the drainage could only be slight. He recommended that it should be done purposively, as it might be the key to many difficulties.

TUMOUR OF THE RIGHT SUPRA-TOXSILLAR REGION.

By DR. WM. HILL.

Dr. HILL added that he had seen the case for the first time that afternoon. The growth in the neighbourhood of the tonsil was not so hard as the enlarged glands in the neck, and there was a history of repeated attacks of quinsies. He therefore had made an incision through the palate into the so-called fossa magna, and had also inserted a trocar, but the swelling proved to be solid. He suggested that it might be a lympho-sarcoma, and, if so, removal by operation would be justifiable.

The PRESIDENT said it was a situation in which mixed tumours were often found, which were susceptible of enucleation. It might be that the tonsil was projected into the fauces by the growth rather than infiltrated by it.

Mr. HERBERT TILLEY had seen a case very like this with the same history of repeated quinsies, in which it was subsequently found that the swelling was due to a tonsillolith, which was ultimately expelled after an attack of quinsy. In that case also the glands in the neck were enlarged. He thought it improbable that this case was a growth, and advised that before a large operation was undertaken the tonsil should be removed.

Dr. DONELAN remarked that the case reminded him of one he had seen which turned out to be an endothelioma of the parotid.

Dr. WM. HILL was interested in Mr. Tilley's suggestion, and would examine the tonsil carefully under an anæsthetic. The cervical gland was very hard, and on that account more like a malignant than an inflammatory swelling.

A TONSIL SNARE DEvised BY BRÜNNING.

By DR. KREBBER (Baden).

PROCEEDINGS OF THE PARISIAN SOCIETY OF
LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

July 9, 1909.

M. MAHUT, *President*.

LUMBAR PUNCTURE FOR AURAL VERTIGO.

By MM. G. A. WEILL, BARRÉ AND CASTINEL.

(1) F—, aged forty-two, plumber, experienced aural vertigo for the past two years to the extent of completely falling. Permanent weakness of vision. Arterial tension 21. After puncture and withdrawal of 6 c.c. of cerebro-spinal fluid the tension fell to 16. Complete disappearance of tinnitus, vertigo and visual trouble in two days. The otological diagnosis in this case was chronic labyrinthitis.

(2) L—, aged sixty-two. Vertiginous crises for the last three years, with falling; relative deafness on the left side. Lumbar puncture, 6 c.c. Marked improvement the very next day, disappearance of all symptoms.

(3) Vertiginous for the past twenty years. Auricular crises with tinnitus and amblyopia. Relative deafness of the right ear. Lumbar puncture, immediate improvement of vision. Disappearance of vertigo. In the case of these two patients the diagnosis was chronic catarrhal otitis. The authors compared these observations with those which have been previously published by Babinski, Ménière, Lermoyez, Lombard, Trétop, Dundas Grant, and several otologists. They especially pointed out the association of auricular and ocular troubles seeming to depend upon the same causes, and to be amenable to the same treatment—lumbar puncture.

They observed with Maupetit and Laffitte-Dupont that there was often a parallelism between arterial hypertension, cerebro-spinal pressure and labyrinthine pressure, and, without doubt, intra-ocular tension.

Cerebro-spinal decompression in these cases seemed to induce beneficial changes in the vaso-motricity and all the phenomena which arose from it.

M. LERMOYEZ: When Babinski advised performing lumbar puncture to combat the various troubles resulting from aural lesions, vertigo, tin-

nitus, and deafness, and published favourable results from this new method of treatment, otologists welcomed that communication with great interest on account of the authority attached to the personality of its author. One must confess that during the past seven years this method has been extolled and placed on trial, the results obtained have been variable and sometimes not over encouraging. In the opinion of its author lumbar puncture is especially adapted for troubles arising from internal ear lesions, and must be so much the more valuable as local treatment has not influenced them. But such an indication is pretty vague, and up till now nothing seems to have occurred to render it more definite. I especially weigh well the action of lumbar puncture on aural vertigo, for as regards its effect on tinnitus, and particularly on deafness, I feel that we ought for the present to maintain the greatest reserve in this respect. But if the effects of lumbar puncture were only sometimes beneficial or sometimes useless, it would matter little to us, working somewhat at guesswork, since, after all, it is a matter of relieving a patient to whom otological treatment can no longer afford any assistance. Unfortunately it is by no means so. In certain cases lumbar puncture performed for aural vertigo may be attended with disastrous results. I have observed two cases in my practice in which lumbar puncture had been performed by persons whose competence was such that no fault in technique could be imputed to them. In one case the operation induced a terrible attack of vertigo, which confined the patient to bed for five weeks. In the other case, tinnitus, which had not before been present, was superadded to the vertigo, and persisted without cessation and with unheard-of intensity. Confronted with such facts, and doubtless there are others similar which have not come under my notice, it seems that we are not justified in performing lumbar puncture at haphazard in all cases of aural vertigo. Vertigo is always a phenomenon arising from stimulation of the equilibratory mechanism, that is to say of the cerebello-pedunculo-vestibular system. It is not necessary that the irritation should always be present in the posterior labyrinth; it may be endocranial, affecting directly the centres for motor co-ordination. But, although it may be too premature to conclude in the way I have indicated, it seems that lumbar puncture rather gives its good results in the presence of intra-cranial hypertension, and that it is much less successful in pure chronic labyrinthine lesions. Be that as it may, to render the indication for treatment definite, it would be indispensable to make a methodical examination of the equilibratory system before and after puncture, for it must be confessed that if we are somewhat sceptical at present the reason is that the observations at our disposal are very incomplete. Acoustic tests will be of little value to us, for there is too great an independence between the anterior and posterior labyrinth to render it safe to infer a lesion of the latter from a change in the former. The posterior labyrinth must be directly investigated, and for this there is truly only one test beyond criticism, *i. e.* Bárány's thermic nystagmus test. This test alone investigates each posterior labyrinth separately. On the contrary, by reason of rapid functional substitution by the healthy labyrinth for the diseased one, the tests of Romberg, Mack, Stein, and even that of rotary nystagmus afford no information. With respect to the galvanic vertigo test, it is daily losing the value which M. Babinski attached to it; it is a very untrustworthy method of investigation, for Neumann has observed galvanic nystagmus persist with total ablation of the labyrinth, and aurists are in general agreement with Erb, that galvanic vertigo depends on the effect of the electric current on the entire encephalon. After all it would be

desirable that all vertiginous subjects underwent the thermic nystagmus test before and after lumbar puncture. One would thus, at the very least have a definite guide as to one's position in the search for the indication for treatment by spinal paracentesis.

CONGENITAL MALFORMATION OF BOTH EARS.

By M. A. CASTEX.

Girl, aged six. Facial asymmetry very marked at the expense of the left side, where there were small fibro-chondromata and a blind external fistula.

The upper part of the right pinna drooped on its lower half; there was atresia of both meatuses, with partial preservation of hearing. Uvula bifid, teeth imperfect. The author considered the only rational intervention to be fixation of the auricle to the mastoid region, after revivifying the surfaces.

AFFECTION OF THE MAXILLARY ANTRUM.

By M. BOULAY.

A woman, aged thirty. Illness commenced a year ago with pains from suppurative gingivitis and loosening of the teeth, since fallen out. The pains are now intolerable and necessitate injections of morphine. There is a swelling of the cheek, depression of the palatine vault, and enlargement of the alveolar border.

Nasal fossæ normal, no pus, cheek dull on transillumination. Permeatal lavage yielded a thick fluid containing whitish lumps. The author thought the case to be one of malignant growth, but was reserved as to its specific nature; however, iodide treatment carried out for ten days did not bring about any improvement.

ABSCESS OF THE POSTERIOR PILLAR.

By M. LE MARC'HADOUR.

These abscesses differ from peri-tonsillar abscesses—(1) by their situation in the posterior pillar itself; (2) in their symptomatology; contrary to peri-tonsillar abscesses, they run their course without trismus; (3) in their behaviour to treatment; they abort when the infiltrated posterior pillar is punctured early, unless pus be present.

FACIAL PARALYSIS FROM ACUTE MIDDLE-EAR SUPPURATION.

BY M. MUNCH.

The facial paralysis developed on the third day of an acute suppuration of the middle ear, post-influenzal. Drainage of the tympanum by repeated paracentesis had been sufficient to bring about a recovery from the paralysis; there had been no need to have recourse to the radical mastoid operation, as one would when facial paralysis occurs with chronic otorrhœa. In the same case sagging of the postero-superior wall of the meatus was observed. This lesion was ascribable to a simple temporal periostitis; it in no way resulted from a mastoid osteitis with fistularisation of the antrum through the border cells.

MODIFIED PALMER'S SPECULUM.

BY M. PAUL LAURENS.

The adjustment and retention of the instrument were particularly easy.

CONSIDERABLE INFILTRATION OF THE ARYTENOIDS AND FIXATION OF THE RIGHT HALF OF THE LARYNX.

BY M. MAHU.

A man, aged thirty-six, syphilitic and tuberculous. Two years ago tracheotomy became necessary, in spite of local and general treatment; the patient has greatly improved since. To bring about closure of the tracheal wound it had to be revivified and sutured. The patient speaks and breathes well, in spite of the restricted movement of the glottis. (No movement of the right vocal cord, and abduction of the left is incomplete.)

M. G. A. WEILL exhibited: (1) An apparatus for utilising the current from the main for canteries; (2) a rotary reverser coupled with a transformer for alternate currents. Both apparatuses were constructed by M. Gaudon.

H. CLAYTON FOX.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Thirty-first Annual Congress, held at the Harvard Medical School, Boston, Mass.,
May 31, June 1 and 2, 1909.*

(By courtesy of the *Medical Record*.)

(Continued from p. 155.)

Tuesday, June 1—Second Day.

A NEW METHOD OF PACKING THE NARIS DESIGNED TO PREVENT
POST-OPERATIVE HEMORRHAGE.

BY W. E. CASSELBERRY (Chicago).

This method consisted in placing a rubber tent with a slightly bulbous end in the naris, pushing it far enough back to permit the bulbous end to project into the naso-pharynx, and packing the tent with gauze with any of the usual packing instruments. He also presented a new model of the "quad" self-retaining speculum.

AN EMBRYOLOGICAL STUDY OF THE METAPLASIA OF THE EPITHELIUM
OF THE TONSILLAR CRYPTS: A CONTRIBUTION TO THE ORIGIN
OF LYMPHOCYTES.

BY DR. GEORGE B. WOOD (Philadelphia).

He noted, first, that in the adult tonsil there were certain phenomena suggestive of the idea that the epithelioid cells of the crypts underwent a metamorphosis, the result of which was the formation of cells morphologically similar to lymphoid cells. Second, that in the embryo the very earliest stages showed a peculiar activity of the epithelium, characterised by the separation of basal epithelial cells, rupture of the basement membrane, and the presence in the epithelium and in the neighbourhood around this epithelial centre of cells morphologically similar to lymphocytes. Third, that the increased growth of this epithelial tissue was attended by the deposition in its immediate neighbourhood of more lymphoid cells. Fourth, that transition cells between the typical epithelial cells and the lymphoid cell might be found not only in the epithelium but in its immediate neighbourhood. These transition cells were more easily studied, and were in greater number in the later stages than in the very beginning. Fifth, that the polymorphonuclear cells were comparatively more abundant

in the early stages than in the later. The appearance of polymorphonuclear cells in the early stages of the tonsil was difficult to explain. Their presence in the neighbourhood and the tissues immediately surrounding them indicated that they were derived from the circulation. On the other hand, the transition types in very early stages in the epithelium would seem to show a common origin with the lymphocytes. They gradually disappeared as the tonsil developed, and this fact would lead one to think that they were not an essential part of the adult tonsil. It might be that the early change in the epithelium acted as a chemiotactic power, attracting the polymorphonuclear cells. It might be argued that these latter, coming from the blood, gave rise to the lymphoid element, were it not for the peculiar metamorphosis of the crypt epithelium. The origin and function of the polylenocytes in the embryonic tonsillar tissue needed further study, but their mere presence did not, to Dr. Wood's mind, interfere with the epithelial origin of lymphocytes.

THE TONSIL OF THE INFANT, THE CHILD, AND THE ADULT.

By DR. HARRY A. BARNES (Boston).

He spoke of the commencement of tonsillar growth in the embryo and at birth. At the latter time we found the tonsil had very little lymphoid tissue. The epithelium of the crypts was essentially like that of the surface, except that at this period many of the crypts were still in the formative stage, and showed either as solid epithelial buds or as buds in which the central cells had formed a core which was ready to be expelled. Between the fourth and sixth month of life the follicles, with their germinal centres, began to show distinctly, and with their appearance the lymphoid tissue became very active. Large numbers of lymphocytes invaded the crypt epithelium and disintegrated its lower layers, so that they appeared as ragged strands of tissue extending from the surface of the crypt into the lymphoid tissue below. This disintegration was apparently by the pressure of numbers. At the same time the crypt walls were pressed tightly together, so that their drainage became obstructed and the large numbers of lymphocytes passing through the epithelium into the crypt cavity were there retained, and formed the cheesy masses so commonly found in the tonsils of childhood. After eighteen months of life we had conditions very favourable for infection, viz. poorly draining crypts containing these masses of cellular *debris*, and a crypt

epithelium which could make but a poor defence if the other resisting powers of the patient were lower. At about puberty retrogressive changes commenced, drainage was more free, and the lymphoid tissue receded from the epithelium. This retrogression occurred only here and there. From the point of infection the conditions resembled those of the infant tonsil.

Dr. LEONARD W. WILLIAMS (Harvard University) opened a discussion, and spoke of the origin of the lymph-cells and channels in various lower animals. He believed that the lymphocytes of the tonsil arose, like those of the lymph-glands, in the mesenchyma.

Dr. H. L. SWAIN (New Haven) referred to the early observations of Stoeckh in Germany, when it was supposed that the destruction of epithelium of the tonsils was a real one, and that there was an absolute erosion of the cells, as shown in Dr. Barnes' pictures. Now, Dr. Wood would have us believe that the thinning out of this epithelium was more or less due to the active processes which the epithelia are undergoing in producing leucocytes. Dr. Swain believed that the tonsil was an active part of the lymphoid structure of the body, a lymph-node with just as much importance, and no more, in the economy than any other lymph-node, except that it was the absorbent recipient of all matters coming into our lungs.

Dr. D. BRADEN KYLE (Philadelphia) said that an epithelial cell in its transition stage was very much like a plant; one could not tell just whether it would turn out a beautiful flower or not. When the embryonic cell became fully grown we had no difficulty in classifying it. We could not have epithelium without connective tissue to support it. The former was, therefore, the dependent structure, and gets its nourishment from the latter. No one had yet proved that an epithelial cell grows from connective tissue.

A CASE OF LARYNGEAL CARCINOMA UNDER OBSERVATION FOR THIRTEEN YEARS; ULTIMATE LARYNGECTOMY.

By DR. HARMON SMITH (New York).

This case had originally come under the care of Dr. Gleitsmann, who had then reported it to the Association. The patient had originally a distinctly whitish tumour of the larynx, the indications pointing to malignancy, although the earlier microscopic findings were "papilloma durum, probably malignant, perhaps cancerous." The patient was unwilling to have anything done, and disappeared from observation until 1907, when he came to Dr. Smith's clinic. A second specimen was reported as being pachydermia laryngis. After removal of each piece for examination the patient felt very much relieved. Some few months later the microscopist reported on another specimen to the effect that the growth was now assuming a malignant histological appearance. Finally

the patient was prevailed upon to enter Roosevelt Hospital, and was operated on by Dr. George F. Brewer, the entire larynx being removed. A low tracheotomy was done ten days previously. Before the patient left the table a good-sized rubber tube was inserted into the stomach through the nose and the patient was fed in this way. Recovery was uneventful. The larynx was filled with a sessile growth springing from nearly the entire right side of the internal structure, and apparently well limited posteriorly and anteriorly by the middle line. It had a white papillary and irregular surface. Sections showed under the microscope the appearance of flat-celled epithelioma, but other sections were very different. The microscopist observed that structure was not always a satisfactory guide for prognosis. The three points of interest in the case were, according to Dr. Smith, the following: (1) The long-standing, slowly advancing malignancy of the tumour; (2) the almost positive belief in malignancy, and yet the presence of sufficient doubt to make one refrain from radical operative measures (the reporter believed that in the early stages the tumour might have been removed by thyrotomy with a reasonable hope of non-recurrence); and (3) the extremely small systematic manifestations for a malignant growth of such long standing.

Dr. D. BRYSON DELAVAN (New York) commented on the unreliability of the older statistics on the results of surgery in laryngeal cancer. He advised most strongly the setting apart of special surgeons for this class of patients.

Dr. CHEVALIER JACKSON (Pittsburg) heartily supported the position of the previous speaker as to statistics. Men said, "This patient is going to die of cancer of the larynx, and we might as well remove it for experience," and these operators rushed into print with their fatal case as a contribution to statistics. It was a crime to touch a case. We had mixed up our operable with our inoperable cases.

Dr. J. W. GLEITSMANN (New York) said that Sir Felix Semon had had a case similar to the one seen by Dr. Smith and himself, and had advised him at the time of the probably malignant character of the growth in the case now reported. This had now been actually confirmed.

RECENT CASES OF SARCOMA.

By Dr. J. PRICE-BROWN (Toronto).

He offered the following conclusions: In sarcoma of the nose the usual site of origin was in the soft tissues, and not in the bony framework which supported them. The origin was usually in the form of a pedicle, which rapidly became sessile. As this sarcomatous mass enlarged and pressed upon the surrounding mucosa abrasions took place, and they quickly became transformed into adhesions.

These adhesions never attained the vitality and virility possessed by the pedicle. When once destroyed they were not likely to re-form again. Recrudescence might, however, take place in the region of the pedicle, and in view of this contingency the regions should be kept under regular observation and control. Owing to the fact that in many cases of nasal sarcoma the affected cavity became entirely filled by the hæmorrhagic growth, that its adhesions were extensive, and that it was impossible to locate them at time of examination, attempts at removal intra-nasally by the ordinary knife were inadvisable, but gradual and systematic dissection out by the cantery knife in suitable cases was a method which was always available and should be encouraged.

Dr. J. E. LOGAN (Kansas City) related his experience with nasal sarcoma, citing cases he had already reported to the Association. He agreed in the value of the cantery treatment in these conditions.

Dr. H. L. SWAIN (New Haven) said he had developed a way in which it was possible to take out the lateral side of the nose and the whole sarcoma with it, with excellent results. He was not prepared to report any case now, but believed that it was possible to lift the nose and lay it back on the cheek and make a clean and complete removal.

Dr. W. L. BALLENGER (Chicago) reported one successful case of removal by the knife and forceps, and his patient was still living, six years after the operation. He would be somewhat doubtful as to the true sarcomatous nature of any pedicled growth. Nasal sarcoma was not as malignant as the same disease in other regions. This point should be remembered in comparing results with those in other areas. In the nasopharynx, however, sarcoma was a very malignant process.

Dr. F. C. COBB (Boston) called attention to the difficulty in distinguishing small, round-cell collections caused by any degree of traumatism from a sarcomatous mass. With the spindle-celled or the melanofoms there was no difficulty.

Dr. O. T. FREER (Chicago) said there was a great difference in the rate of growth of round-celled growths undoubtedly sarcomatous.

PRIMARY CANCER OF THE TRACHEA.

By DR. T. PASSMORE BERENS (New York).

He said that he had been able to find records of but thirty authentic cases. His patient was a man, aged fifty-five, whose first symptom was a persistent cough, followed by dyspnœa. Both vocal bands were reddened and thickened; beginning at the second tracheal ring was a greyish-pink, velvety mass running way round the trachea and diminishing its calibre to about one third of its normal size. The patient was placed in the hospital and the trachea opened from the larynx to the sternal notch. The growth extended one inch below the latter point, was not adherent to the

rings, and did not extend beyond the limits of the tube. The larynx was free from all malignant deposit. Owing to the extension of the process so deep down the trachea exsection of the latter was out of the question, and the mass was curetted away apparently successfully, for the result of the curettage left apparently normal appearing tissue. The shock of the operation was considerable, though the amount of blood lost was trifling. The temperature was 101° F.; the patient did badly, and died of pulmonary oedema and heart failure three weeks after the operation. Microscopical diagnosis: Columnar epithelioma.

Dr. E. L. SHURLY had seen a similar case diagnosed by the pathologist as angio-sarcoma. The man died from hæmorrhage following curettage through a tracheotomy wound.

NASAL TUBERCULOSIS, TWO CASES; ONE INVOLVING RIGHT ETHMOID BONE, WITH RECOVERY AFTER OPERATION.

By DR. OTTO T. FREER (Chicago).

He gave a general description of tuberculous processes in the nose and of their relation to lupus. We may have the ulcer, tumour, diffuse infiltration, and formation of granulation areas. The author's first case was that of a girl, aged twenty, on whom three operations were done. In the first the entire middle turbinate was removed, and also the tissue from the posterior border of the septum, where it assumed the form of an ulcerated tumour. The microscope showed it to contain abundant giant-cells embedded in fields of epithelioid cells, but no tubercles nor bacilli. Some weeks after there were evidences of recurrence, and further eradication was done, with but temporary relief. A third operation was done under half chloroform narcosis, and the right ethmoid region was thoroughly exenterated. Examination of the tissue removed showed typical miliary tubercle and some bacilli. The patient was nervous for some months after the last operation, being markedly asthenopic, but this symptom has disappeared and she is now in blooming health, nearly two years after operation. The second patient was a woman, aged fifty, presenting a grave variety of the infiltrative form. There was a bulging swelling on either side of the nasal bridge and a marked thickening of the septum, with ulcerations and irregular surface. The extent of infiltration rendered complete removal impossible, and the nostrils were simply freed. Microscopical examination showed epithelioid cells, lymphoid cells, polymuclear leucocytes, and giant-cells.

Tuberculin injections were given, but without perceptible benefit, and the patient passed out from under observation, so that the ultimate condition could not be learned.

CASE OF NASAL TUBERCULOSIS.

BY DR. W. SCOTT RENNER (Buffalo, N. Y.).

His patient was a healthy woman, aged twenty-eight, whose nose was completely obstructed by a pyriform tumour occupying the position of the septum. A provisional diagnosis was made of sarcoma, and a bit of the mass removed for examination, which showed it to be tuberculous, containing giant-cells and bacilli. The lungs were normal, the heart not very strong, and there was a history of old glandular abscesses in the neck. The growth was removed piecemeal down to the cartilage, and later the anterior portion of the inferior turbinate, which was found to be infiltrated. The wound surfaces were treated with lactic acid, and the edges canterised with the electro-cautery. Iodoform gauze was used as packing until healing occurred. The reporter said that he was not sure that this was a primary infection in the nose, in view of the old scar in the neck. The septum probably became involved first, and later the turbinate.

Dr. EMIL MAYER (New York) called attention to the difficulty in diagnosis in the early stages of these lesions. He did not believe that the term "lupus" should be dropped from our nomenclature. The size of the growth in the nose was no clue to its nature. This disease might advance to a late stage in the larynx with only trifling symptoms, or none at all.

CAVERNOUS SINUS THROMBOSIS.

BY DR. LEWIS A. COFFIN.

THE case was a woman, aged fifty-nine, who presented typical evidences of acute frontal sinus disease, and was operated on, the complete Killian being done. No polypi or granulation tissue were found in the sinus, although the lining membrane was very thick from congestion, as was also that of the adjacent sinuses. The eye symptoms were relieved, but there developed a marked chemosis of the lower lid. A consultation was held, and it was finally decided that there had been a thrombosis of the cavernous sinus, but it was also decided that the operation had been of the greatest benefit, as by reducing the cedema about the tissues of the eye the sight of the

patient had been saved, if not her life. To reduce the coagulability of the blood as well as to break up any existing thrombus or clot, lemonade was given freely. Recovery was without incident.

Dr. W. L. BALLENGER did not think that the history given by Dr. Coffin presented the features of a cavernous sinus thrombosis. He was unable to tell in a case of his own whether the appearance of the skiagraph indicated suppuration in the sinuses or only a catarrhal condition. A mere clouding of the X-ray picture did not justify operation.

TERATOMA OF THE SOFT PALATE.

BY DR. LEWIS A. COFFIN.

A woman, aged sixty-six, complaining of cough, at first ascribed to enlarged lingual veins. A small tumour was discovered behind and above the uvula, and of the shape of the latter, hanging free in the pharynx. It was thought to be papillomatous, but proved to be a teratoma. Dr. Coffin quoted Sarapin as saying that the mixed tumours of the palate formed a group by themselves pathologically, anatomically, and chemically; that they had a common origin with teratomata and teratoid growths, and that from a clinical point of view they were benign in character, easy to enucleate, and not inclined to recur.

BACTERIOLOGY OF THE NORMAL NOSE.

BY DR. FREDERIC C. COBB (Boston).

His conclusions were as follows: (1) The principal source of bacteria in the normal nose was the vestibule. (2) Disinfection with peroxide and bichloride sterilised the vestibule for all organisms except the staphylococcus. (3) Disinfection by Harrington's solution would sterilise the vestibule of all germs (formula: corrosive sublimate, 2 grm.; hydrochloric acid, 150 c.c.; alcohol 70 per cent., 2500 c.c.). (4) The remaining cases showing bacteria might be due to some as yet undiscovered error in technique. (5) Cultures in pathological cases should be regarded as reliable only when the cot in the vestibule was sterile, and any form of staphylococcus should be treated with suspicion as the positive factor in any disease of the nose owing to the difficulty of eliminating its presence from the normal nares.

Dr. GEORGE B. WOOD said that he would like to make Dr. Cobb believe that the interior of the nose, especially the posterior portion, was sterile in the normal individual. He believed that the normal sinuses were also sterile.

THE NOSE AND NASO-PHARYNX IN INFANTS AND YOUNG CHILDREN.

BY DR. J. M. INGERSOLL (Cleveland).

A demonstration of this subject by means of charts. Concerning the development of adenoid tissue in the naso-pharynx he said that, on account of the small oral cavity and shape of the naso-pharynx in infants, a curette with a straight handle and its blade set at an angle of 55° to the handle would follow the posterior wall of the naso-pharynx better and remove the hypertrophied tissue more completely than it would if the blade were more nearly perpendicular to the handle, as it was in many curettes. The bayonet blade of Fein was devised to permit greater latitude in the movement of the curette and thus allow its blade to follow the conformation of the naso-pharynx. The width of the blade should be determined by the width of the naso-pharynx. A curette 1.3 cm. wide, with a blade 1 cm. wide, is probably small enough for all infants. The shape of the naso-pharynx in infants makes it practically impossible to do a complete adenectomy with forceps.

THE ACTION OF THE RESPIRATORY MUSCLES IN THE PRODUCTION OF VOICE.

BY DR. G. HUDSON MAKUEN.

The author said that "the action of the respiratory muscles in voice production differed in some important respects from their action in passive breathing; while the function of the diaphragm was inspiratory in passive breathing, it must be expiratory in active or artistic breathing. Although this muscular diaphragm was generally classed among the involuntary muscles, its action, like that of so many other so-called voluntary muscles, might be brought entirely within the domain of the will. The proper use of the respiratory muscles for singing and speaking might be acquired by practice, and should be taught by the teachers of voice culture.

Dr. J. H. LOWMAN (Cleveland) said he would like to ask Dr. Makuen if he had observed the Litten phenomenon during the breathing act. In many people this was not observable while the diaphragm moved distinctly.

Dr. J. PAYSON CLARKE asked if Dr. Makuen had used the fluoroscope during his observations.

Dr. Makuen said that experiments in this direction with the fluoros-

cope had thus far been very unsatisfactory, but he hoped that the moving apparatus would be so perfected that it would become possible to make accurate demonstrations for teaching purposes.

THE CHOICE OF AN OPERATION FOR THE CORRECTION OF OBSTRUCTIVE
DEVIATIONS OF THE NASAL SEPTUM: A PERSONAL POINT OF
VIEW.

BY DR. W. L. BALLENGER.

He said that, although he was an ardent partisan of the submucous resection, the technique was often difficult, the time for the operation long, and the difficulties many. The operation should be reserved for those cases which could not be corrected by other and simpler measures. In the choice of an operation certain fundamental facts should be remembered. Cartilage had a tendency to return to its former position. Bone, when fractured and placed in a new position, had but slight tendency to return to its former position. Roe's crushing operation might therefore be chosen in these cases in which the obstructive lesion was limited to the perpendicular plate of the ethmoid bone, and the author's operation might be practised when the obstructive lesion was limited to the vomer. Non-bevelled flaps which were not self-retaining, as in Asch's operation, required the prolonged use of some form of nasal splint for a period of from four to six weeks. So also did the Kyle operation. Any procedure which required the prolonged use of splints or tubes was not, in his (Ballenger's) opinion, justifiable. Non-bevelled flaps, which were partially self-retaining, as in Sluder's operation, were utilisable in extreme angular deviations of childhood. Bevelled flaps, which were self-retaining, were rational procedures for the correction of obstructive deviations limited to the cartilaginous septum (Watson, Gleason, Price-Brown operations). The submucous operation found its special field in compound deviations involving the cartilaginous and bony portions of the septum.

Dr. O. T. FREER said, in discussing this paper, that fracturing operations were always uncertain, and he regarded the return to them as a retrogression.

Dr. J. O. ROE (Rochester) was a believer in fracturing operations. The submucous operation was advantageous in cases with a marked septal thickening where we could thin out the cartilage and make a more ample breathing space instead of cutting away the turbinate. When we had a thin, bony septum, simply bent out of line, it was absurd to go in and take out the bony framework. In all operations on the septum, no matter what one, for correcting cartilaginous deviations, the fracturing forceps as a supplement was indispensable.

Dr. BALLENGER said, in closing, that it often required two hours for him to do a Freer operation, whereas in the method advocated by him the operation could be completed in twenty minutes. He would admit that the Freer operation would get the most perfect results if one took time enough and the patient had the endurance. Blindness and even death have followed the submucous operation, so also sinking in of the nose. He usually did a fracturing operation in young children or else the bevelling procedures, but saw no use in doing a submucous resection, as it took too much time.

REPORT OF FATAL CASE OF STATUS LYMPHATICUS OCCURRING IN A
PATIENT OPERATED ON FOR TONSILLAR HYPERTROPHY UNDER
COCAINE ADRENALIN INFILTRATION.

By Dr. THOMAS J. HARRIS (New York).

The patient was a Russian Jew, aged thirty, apparently in good health. One sixtieth of strychnine sulphate was given by mouth after a fluid lunch. Half an hour later the tonsils were injected with about $\frac{1}{12}$ gr. cocaine in salt solution, with 8 to 10 minims of adrenalin 1:1000. Immediately following a second injection (a first having been rejected), and the above figures representing the drug amount actually retained from both injections, the patient grew pale and vomited. Deep cyanosis followed. The operation was quickly concluded, when it was discovered that he was pulseless, while respiration was continued for some time. The symptoms were those of thymic death. Autopsy showed a markedly dilated right auricle and swollen right ventricle, enlarged axillary and groin glands, and a thymus weighing 18 grm. The cause of death was in all probability an over-dilated right ventricle due to an enlarged thymus gland, with the cocaine-adrenalin acting as an exciting cause.

Dr. THOMAS HUBBARD added the history of one fatal case from adrenalin in his own practice. This drug had been used with great recklessness, and it was time to call a halt. He thought that 2 or 3 minims retained in the circulation was the maximum dose. His own patient was a healthy young man about to be operated on for septal trouble, and he was under chloroform and ether anæsthesia. Every reflex appeared normal and respiration was perfect. He was given an injection of adrenalin for hæmostasis, but part of it escaped into the stomach, and he received another, so that he probably got from 15 to 20 minims. During the second injection his heart fluttered, he gave twelve or thirteen respirations, and was dead. The adrenalin doubtless escaped into the circulation and caused the death.

Dr. H. L. SWAIN said that he had one case of enlarged thymus, and the external application of the adrenalin caused enough shrinkage to restore comfortable breathing. There was no incompatibility between the thymus and the drug. He thought that Dr. Hubbard was correct in

assuming in these cases that the drug got into the circulation and caused immediate contraction of all the blood-vessels, sending the blood directly and forcibly back upon the heart.

Dr. J. O. ROE would hesitate to ascribe all the effect in this case of Dr. Harris's to the adrenalin. Many patients had, however, a peculiar sensitiveness to cocaine.

Dr. HARRIS could not believe that the cocaine had had any deleterious effect in his case.

(To be continued.)

Abstracts.

NOSE.

Price-Brown (Toronto).—*Case of Septal Abscess.* "Canadian Journ. of Med. and Surg.," October, 1909.

This was the history of a boy, aged ten, who while playing was struck on the nose by the head of another boy. At first there was external swelling and pain. These both subsided, while internal stenosis increased. Nearly four weeks after the accident the patient was referred for treatment. The septum was found to be very much distended. On pressure both sides of the bridge fluctuated. Still, there was neither pain nor fever, the physical condition being one of anæmia.

On opening the right side freely there was a copious discharge of pus, the cavity extending as far back as the vomeric union. On the following day, as the operation was not attended by any relief of the left side, this also was opened, followed by discharge of dark blood without pus, indicating that no perforation had taken place. The recovery was uneventful.

P. B.

De Champeaux (Lorient).—*A Study of Sneezing.* "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol.," February 27, 1909.

The author recalls the statement of Katzenstein that irritation of a certain spot in the frontal lobe of the brain will provoke sneezing. In paroxysmal sneezing due to spasmodic rhinitis, he finds that light massage of the frontal region by drawing the fingers from the temples towards the middle line of the forehead several times in succession will relieve the sensation of irritation leading to the impulse to sneeze.

Chichele Nourse.

Scheppegregell, W. (New Orleans).—*The Immunisation Treatment of Hay-fever.* "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol.," February 19, 1910.

The result of observations in a suburb of New Orleans showed that 80 per cent. of cases of hay-fever in that neighbourhood were caused by the irritating effects of the pollen of a kind of rag-weed (*Ambrosia artemisiifolia*), which grows on the waste land and fallows in very large quantities. Towards the end of August the air becomes heavily charged with the pollen, and it is possible to predict within a day or two the date at which susceptible people will begin to suffer from their usual attack.

The author finds that an artificial tolerance to the pollen may be established, and the object of his mode of treatment is to establish this

tolerance before the attack is developed. For a period of from two to six weeks beforehand the patient should inhale the pollen from the stamens three or four times a day at first, and later at more frequent intervals. Each inhalation will be followed by slight sneezing, lachrymation, and rhinorrhœa, which pass off in the course of an hour. Gradually less and less reaction is produced, until finally it disappears. Then the patient is temporarily immune to hay-fever, but the treatment must be kept up until the hay-fever season arrives. A little bag of sterile gauze containing some of the male flowers is the most convenient means of applying the treatment.

Chichele Nourse.

Wendling (Chartres).—*Empyema of the Maxillary Sinus of Dental Origin in Children.* "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol.," February 27, 1909.

A child, aged eight, complained suddenly of acute pain on the left side of the face; at the same time the left cheek began to swell. These symptoms increased, and continued for some days without relief, when suddenly muco-pus in considerable quantity began to be discharged from the left nostril; this was found to be coming from the middle meatus. On transillumination that side was less translucent than the other. A minute point of caries was discovered on the left upper canine tooth. It was extracted, and an abscess was found at the apex of the root, which had burst into the sinus. The sinus was washed out with sterilised water several times and a cure followed.

The occasional occurrence of empyema of the antrum in children had already been observed by Moure ("Rev. Hebd. de Laryngol.," 1906). At birth there is no close relationship between the sinus and the canine tooth, but little by little they approach one another, and at about the age of seven and a half years the maxillary sinus rapidly increases in size, until the thickness of bone between the floor of the antrum and the root of the canine is not more than half a millimetre. The information furnished by transillumination is not of the same value in the child as in the adult.

Chichele Nourse.

Taptas, N. (Constantinople).—*Contribution to the Study of Maxillary Sinusitis.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," November-December, 1909.

The author, after considering in detail the various methods of treatment, concludes as follows:

(1) The Caldwell-Luc operation when properly performed cures the worst cases, as it allows of a thorough cleansing of the diseased cavity. The importance of a large opening into the nose is emphasised.

(2) Recent cases can usually be cured by puncturing through the inferior meatus and washing out the cavity a few times.

(3) If the last procedure fails an opening may be made into the sinus through the inferior meatus, after injecting the following local anaesthetic: Cocaine hydrochlor., 1·0; tinct. iodi (decolourised), 0·3; acidi carbolici, 0·3; glycerini, 10·0; aquæ destillatæ, 100·0; sol. adrenalin (1 in 1000), 2 drops to each gramme.

(4) Before any treatment is undertaken the teeth should be carefully examined, and if any disease suspected, removed.

Anthony McCull.

Syme, W. S.—*Chronic Sphenoidal Sinus Disease.* "Lancet," February 12, 1910.

Based on a total of seventeen patients operated upon during the past

eighteen months. In nine the disease was unilateral. The cases are narrated in detail. The chief complaint was of nasal and post-nasal discharge and chronic head cold. Headache was common. Rhinological appearances were fairly constant, atrophic changes being observed in most. None of the signs and symptoms could be considered as pathognomonic of sphenoidal disease, but were, rather, suggestive of disease in the posterior accessory cavities, and examination of the sinus was necessary to complete the diagnosis. This examination is discussed. Treatment is fully considered; in the majority of cases milder measures than operation should be tried, as nasal douching following by drying and insufflation of powdered boric acid; or the sinus may be regularly washed out and similarly dried and insufflated. When operation is necessary the middle turbinal usually requires to be removed. Indeed, this is sometimes sufficient, by giving freer drainage, to cure the condition. For opening the sinus, Syme prefers a Hajek's punch, followed by curetting and swabbing with zinc chloride, etc., drying and dusting with powdered boric acid. The anterior wall should be removed as completely as possible.

A portion of the paper is devoted to the ocular conditions of the patients reported upon.

Macleod Yearsley.

PHARYNX.

Coues, W. P.—*The Results of the Clinical Throat Examination of 212 School Children.* "Boston Med. and Surg. Journ.," February 17, 1910.

The children ranged from six to fifteen years: 153 (over 72 per cent.) showed chronic tonsillar hypertrophy; 103 (50 per cent.) showed marked dental caries. Discussing causation, the author considers three factors as predisposing: (1) Poor home surroundings; lack of fresh air and sunlight; (2) improper and insufficient food and neglect of the teeth; (3) unhygienic school conditions.

Macleod Yearsley.

Flatau (Berlin).—*The Treatment of Peritonsillar Abscess.* "Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie," November–December, 1909.

The author warns against the use of poultices and fomentations, which may produce erosion of the arterioles and lead to fatal hæmorrhage when an incision is made, quoting cases in his own experience.

He recommends dry cupping externally over the insertion of the sternocleidomuscle two or three times daily, the cup or cups remaining *in situ* for an hour at a time.

By this means he claims that swallowing is made easier and the course of the disease in many cases checked.

Should pus be suspected he advises exploratory puncture with a trocar and cannula, followed by aspiration or incision when necessary, though this is more painful.

Anthony McCall.

Roe, J. O.—*Palato-pharyngeal Adhesions: Methods adopted for their Relief, with Report of a New Operation.* "Journ. Amer. Med. Assoc.," January 15, 1910.

The author describes an interesting and rather rare condition—that of palato-pharyngeal adhesions. They may be (1) congenital; (2) simple

inflammatory—catarrhal; (3) the result of excoriation by acid discharges; (4) local manifestations of exanthemata, tubercle, syphilis; and (5) traumatic. Treatment, either by mechanical dilators, caustics, permanent obliterators, suture, or plastic operation, is unsatisfactory and tedious.

Macbod Yearsley.

LARYNX.

Beck, J. C. (Chicago).—*Cyst of Epiglottis*. "The Laryngoscope," September, 1909, p. 704.

Child, aged five, brought to hospital on account of urgent dyspnoea. Immediate tracheotomy. Subsequently a diagnosis of papilloma or myxoma with oedema of the glottis was made. Six weeks later, by the direct method, an attempt was made to snare off the tumour, which was about the size of a hazel-nut. It collapsed, however, and discharged its contents. Beck then removed as much of the cyst-wall as possible, and cauterised the cavity.

Several months later the patient returned with a recurrence. External pharyngotomy was then performed, and the entire cyst removed. The author suggests that it was of the thyro-glossal type.

Dan McKenzie.

Scheier, M. (Berlin).—*On Unilateral Disease of Vocal Cord*. "Arch. f. Lar.," Bd. xxii. Heft 3.

Man, aged fifty-three, with hoarseness of five months' duration. Right vocal cord quite normal; left cord in its whole length red, swollen, beset with small granular excrescences, especially near the vocal process; no defect in mobility. "Silence treatment" was followed by diminution to a slight redness of the left cord.

This case is published as being an exception to the rule that unilateral disease of the vocal cords is generally of a serious nature, say tuberculous, syphilitic, or malignant, and several other such exceptional cases are referred to.

Dundas Grant.

MacDonald, W. A. (Toronto).—*Case of Congenital Membrane between the Vocal Cords*. "Canadian Journ. of Med. and Surg.," December, 1909.

Patient, female, aged twelve, thin and anæmic; voice high-pitched, feeble falsetto, almost aphonic. On examination tonsils were found to be hypertrophic, almost touching in the median line. In the larynx a membranous crescentic web united the vocal cords. The centre of the web was thin and of a greyish yellow colour.

On August 28, under bromide of ethyl, the tonsils were removed. On September 7, under cocaine anæsthesia and adrenalin, the membrane was completely and clearly removed by one bite of the Halle-Krause double punch-forceps. There was no bleeding. But under the first membrane there now appeared to be a second membrane. This, however, proved to be the thickened commissure of the one already removed.

The voice was lowered very much immediately after the operation and had improved in volume and tone. In eight days the anterior commissure filled up again and the voice became higher pitched. Treatment by nitrate of silver had no effect.

On October 4 the original operation was repeated. On October 10

Schrötter's tube, armed with a dull blade anteriorly to fit into the commissure, was inserted and retained in position for two or three minutes, the operation being repeated at first daily and then at longer intervals. Improvement was constant. Nearly a year had elapsed since the last treatment and the condition now is good.

Price-Brown.

EAR.

Banks Raffle, A.—*Middle-ear Disease as a Complication of Whooping-cough.* "School Hygiene," vol. i, No. 2, February, 1910.

A short note upon a hitherto neglected subject. In 400 cases, 25 children suffered from middle-ear disease. The onset was usually early in the "spasmodic" stage, and marked by very little constitutional disturbance. The complication is probably brought about by the forcing of infective material into the Eustachian tube by the respiratory disturbance of the "spasmodic" stage.

Macleod Yearsley.

Jacob, Etienne (Paris).—*A Case of Mastoiditis without Perforation of the Membrana Tympani with a Fistula into the External Meatus.* "Rev. Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie," January 9, 1909.

A man, aged fifty-eight, consulted the author on account of a purulent discharge from the right ear, when the following condition was found, after removing the pus. The membrane was intact and moved freely with Siegle's speculum. On the posterior wall of the meatus about 1 cm. from the orifice was a small fistula discharging pus, which looked like a furuncle. When the patient inflated his ear by Valsalva's method pus flowed abundantly from this aperture, and when all the liquid had been expelled air came through freely and easily.

About a month before the patient had an attack of influenza, followed by slight pains behind the right ear and diminution of the hearing power. This lasted four days, when the mastoid pain became more intense, and there was some fever. On the eighth day a purulent discharge appeared from the meatus.

Under local anaesthesia the fistula was slit, and the aperture in the bone enlarged slightly. The wound soon healed and the hearing became normal.

Chichele Nourse.

Leidler, R. (Vienna).—*Carcinoma of the Middle Ear in the Light of the Modern Investigation of Cancer.* "Archiv für Ohrenheilkunde," Bd. 77, Heft 3 and 4, November, 1908, p. 177.

A discussion based upon the course of three cases, details of which are as follows:

CASE I.—Woman, aged forty-six, who had suffered since childhood from discharge from the right ear. Six months before her first visit to the clinic she was seized with a violent pain in the right ear; at the same time irritation of the region innervated by the lower twigs of the facial nerve was experienced, and two days later facial paralysis was observed.

On examination, a grape-like polypus, greyish-red, ulcerated, vascular and somewhat hard was seen in the meatus. Behind and below the lobule there were a few rounded, hard tumours about the size of peas, and between the mastoid process and the posterior meatal wall a hard resisting tumefaction was perceptible. Submaxillary glands enlarged.

The affected ear was completely deaf; the vestibular tests showed a reduced or obliterated reaction. The polypus proved to be made up of squamous epitheliomatous tissue.

The removal of the growth involved the usual extensive opening up of this region—dura, lateral sinus, carotid artery, digastric groove all being exposed. The cochlea also had been destroyed by the cancer.

Four weeks after the operation a recurrence was found and the patient ultimately died.

CASE 2.—Man, aged nineteen, who also gave a history of long-standing discharge from the left, the affected ear, but about a year before his first appearance the discharge had gradually stopped. Six months later violent pain in the ear was experienced and along with it some bleeding; soon after a painful retro-auricular swelling was observed, which afterwards broke down, discharging foul pus and blood. About the same time vertigo and facial paralysis appeared. Microscopical examination proved the disease to be epithelioma. The operation showed that the growth extended along the Eustachian tube. The after-history of the case is not reported.

CASE 3.—Female, aged forty-six. History of ear-discharge for ten years, with the occurrence of severe mastoid pain at a later date. The radical mastoid operation was performed, but as healing did not take place, a second, and later, a third operation were undertaken. Eventually it was found that the granulations which continued sprouting up from the large cavity were epitheliomatous in character, and that the disease had extended deeply was obvious from the fact that the lateral pharyngeal wall was pushed forward as a conical swelling almost to the middle line in such a way as to block the posterior choana. The after-history is not reported.

The writer comments upon the association of cancer of the ear with suppuration. He suggests that by reason of the extensive bony destruction induced by the disease, an X-ray examination might give early warning of its presence in those cases which are looked upon as simple suppuration.

Dan McKenzie.

Heiman, Theodor (Warsaw).—*Otosclerosis*. "Monats. f. Ohrenheilk.," Year 43, Nos. 10, 11, 12.

This paper was read at the Eighth International Otological Congress held in Budapest, August, 1909. Commencing with an exhaustive historical survey of the work which has been done towards the knowledge of this disease, its ætiology, pathology and treatment are all elaborately discussed, and the author's conclusions finally summarised as follows:

(1) The anatomical basis of the disease consists in a bony ankylosis of the stapedio-vestibular joint, the round window being sooner or later involved as well.

(2) This fixation of the stapes is probably dependent on an inflammatory process *sui generis*, which, perhaps, at first affects the whole or greater portion of the mucous membrane of the middle ear, but is especially localised to the neighbourhood of the oval window.

(3) At present there is not sufficient evidence to suppose that the disease may primarily start in the labyrinth capsule and later spread to the region of the stapedio-vestibular joint, although this possibility cannot be excluded. No explanation can be given for those cases of marked progressive deafness, in which the stapedio-vestibular joint and the nerves of the labyrinth are not also affected.

(4) The main factor in the production of the deafness is the fixation of the stapes, from whatever cause this condition may arise—that is, whether it proceeds from the middle ear, the capsule of the labyrinth, or has a congenital origin.

(5) The cause of the disease is some general disturbance of the nutrition brought about by various agencies.

(6) Heredity, anaemia, syphilis, pregnancy, arthritis all appear to have some causal relation to otosclerosis; it has a certain amount of age-incidence, and the female sex is particularly predisposed to the disease, yet in certain cases no clear reason can be stated for its occurrence.

(7) Accurate and numerous investigations must yet be undertaken in order to determine how far the disease is a local one, and if it is in any way dependent on affections of the nose or naso-pharynx.

(8) Otosclerosis is a local manifestation of some general affection of the nutrition.

(9) The clinical picture of otosclerosis resembles very closely that which occurs in the case of ankylosis of the stapes due to adhesive processes.

(10) A certain amount of improvement may result from general treatment. All local measures in cases of pure primary otosclerosis are useless.

(11) The term "otosclerosis," which neither properly describes the pathology, clinical aspect, nor the cause of the disability, as well as the expression "dry middle-ear catarrh," should be discarded, and "periostitis ossificans stapedio-vestibularis" substituted.

(12) Should further research show that the disease starts primarily in the labyrinth capsule and is of an inflammatory nature, it might then be referred to as "otitis vascularis stapedio-vestibularis."

Possibly the whole article would have been condensed with advantage. As regards the conclusions, some appear redundant and others might well have been omitted. With No. 5 and No. 8, which, after all, embody the essential points of the remainder of Heiman's summary, most will be prepared to agree as to the probable causation of otosclerosis, whilst as far as treatment is concerned No. 10 follows almost as a natural corollary; and except, perhaps, for a record of current opinion, the paper adds nothing of practical worth to our knowledge of the special lesion, since, as far as the aurist is concerned, when once the diagnosis has been established, its treatment still belongs to the domain of general therapeutics.

Alex. R. Tweedie.

Kyle, D. Braden.—*Subjective and Objective Sense of Sound-perception.* "Laryngoscope," January, 1910.

The author distinguishes between *physiological* and *pathological* failure to meet the normal tests for hearing. Whilst the subjective and objective senses of sound-perception may be determined to a large extent by tests, it is not always easy to find out whether a diminution or exaggeration is physiological or pathological, for we certainly do not all hear alike or see alike. Kyle illustrates this by individual tones of voice in singing and speaking, and he thinks that these peculiarities have a great bearing on diagnosis and prognosis in deaf cases. Another peculiarity is that in some individuals there may be a limitation of the field of hearing, corresponding very much with limitations in the field of vision. He suggests that in some there may be a normal subjective and objective sense of sound-perception, in unison and of equal degree, whilst in others

they are not in unison. This is physiological and anatomical, whilst pathological alterations may occur in both normal and abnormal physiological cases, and the latter will not respond to treatment as actively and definitely as will individuals not having these peculiarities.

Macleod Yearsley.

REVIEW.

Diseases of the Nose, Throat, and Ear. By CHARLES HUNTOON KNIGHT, A.M., M.D., and W. SOHIER BRYANT, A.M., M.D. Second edition, revised, with 230 illustrations. Philadelphia: P. Blakiston's Son & Co., 1909.

This handsome volume is the second edition of Dr. Knight's text-book on diseases of the nose and throat, with the addition of a section on diseases of the ear contributed by Dr. Sohier Bryant. The treatise is a condensed, excellent systematic account of the diseases of the parts mentioned. It commences with the description of such points in the anatomy as are of clinical importance, and there is a short account of the physiology of the nose, which contains most of the knowledge the practitioner desires to have. The methods of examination are clearly set forth, but it will be agreed on all hands that a focal distance of sixteen inches is too great for the frontal mirror. Most of the instruments of any use in examination and treatment are described and illustrated, but we do not understand why Woakes' nasal irrigator is drawn upside down. The author describes the various forms of indiarubber and celluloid splints, but adds his belief that "most of these cases do better without such a foreign body in the nose even though it may not be very irritating," an opinion which many of us will share. Dr. Knight is moderate in his views as to the indications for radical operation on the maxillary and frontal sinuses. One of the most complete chapters in the book is that upon deviations of the nasal septum, in which fullest justice is done to various authors; Asch, Roe, Moure, Freer, Ballenger, Killian receive ample justice. A warning is uttered on page 147 against "placing implicit faith in the microscope as a guide in diagnosis, at least as applied to sarcoma." For the removal of hypertrophied tonsils, the author states that "the accepted instrument for use in cutting operations is a modification of Physick's tonsillotome, proposed several years ago by Morell Mackenzie. Many so-called improvements have been suggested which complicate the instrument and add to the difficulty of the operation" (p. 228). He considers that "rightly used in suitable cases it is capable of ablating almost the entire tonsil, and that without endangering the large blood-vessels in the cervical region." His opinion as to the indications for complete tonsillectomy is not very definite, and we venture to think that he has no very strong convictions in favour of its general adoption. Ulcero-membranous or diphtheroid angina due to the fusiform bacillus of Vincent receives due notice (p. 262). The author's views with regard to singer's nodules are not very encouraging. "In most cases the forceps is not available; the use of the cautery demands the utmost skill and delicacy, and is to be thought of only in trained and tolerant subjects; and finally the enforcement of absolute rest, while most essential, is almost impossible" (p. 305). No reference is made to Curtis's special vocal exercise. Very useful indications are given with

regard to the general diseases, such as syphilis and tuberculosis affecting the larynx. In his preface Dr. Knight expresses his opinion with regard to any anticipations of a revolution in laryngoscopy from the introduction of the direct method of examination. Although he admits that Jackson, Ingals, Mosher, Killian, and Brünings have combined to bring it to a stage of almost absolute perfection, he holds that the results attained by the ordinary means of examination are in general satisfactory. His opinion is similar with regard to Hays' ingenious method of pharyngoscopy, which he considers difficult, though in doubtful cases likely to prove of utility.

Dr. Sohler Bryant's extraordinary energy in the production of monographs on diseases of the ear within the last few years cannot fail to have been observed by all readers of current otological literature, and this excellent and concise section is obviously the outcome of this remarkable industry. Each chapter in the section concludes with an author's bibliography, by which the reader can find the original work of which the paragraphs in this section may be looked upon as condensed abstracts. He is very strong in some of his views, and apparently is quite unconvinced by the piano-string theory of the basilar membrane, as he denominates Helmholtz's description. He attaches considerable value to the membrane of Corti, and looks upon it as being made up of hairs on the auditory nerve-cells. The examination and methods of testing the hearing are well described, and he gives an interesting way of using the watch for the purpose of measuring the efficiency of the higher auditory centres (p. 507). The watch is first approached from beyond the patient's hearing range and the distance noted at the point when he first perceives the tick; it is then slowly withdrawn, and the distance measured when the patient loses it; lastly, it is approached to the ear for the second time until the patient again hears it, and the distance noted. We may then get such figures as 15, 29, 23—"15" expressing the distance of the first observation, "29" the distance of the second, and "23" that of the third. To find the absolute power of the auditory centre he takes the percentage of the first number to the last; in the instance given this amounts to 65 per cent. Here and there Dr. Bryant's classifications are exceptional, though not open to any particular objection. He recognises *otitis* on the one hand and *trophopathia tympanica* or *atrophic changes* on the other. *Otitis* may be—first, *otitis media catarrhalis nita* (we are not familiar with this word in otological works); second, *otitis virulenta*; third, *otitis purulenta chronica*; fourth, *tuberculosa*; fifth, *luetica*. Of the atrophic changes he recognises—first, *atrophic changes of inflammatory origin*, including (a) *fibrosis tympanica*, (b) *sclerostenosis tympanica*; and second, *tympanic changes of vaso-motor origin*, including (a) *hypertrophia tympanica*, (b) *sclerosis tympanica* (p. 525). The conditions there referred to are fairly obvious. The course of suppuration is described as being one of four—subacute, chronic, perennial, or recurring (p. 531). The difference between "chronic" and "perennial" is rather fine, but it is to be remembered that we have constantly to explain to our patients the difference between "chronic" and "incurable." The diseases of the labyrinth are, as a whole, dismissed with a rather short chapter, which we are sure Dr. Bryant could easily elaborate. On the whole, there is much that is interesting and suggestive in this work of Dr. Bryant, and the communications in the author's bibliographies are well worth the attention of the reader.

D. G.

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CONGENITAL INSUFFICIENCY OF THE PALATE.

By A. BROWN KELLY, D.Sc., M.D.,

Surgeon for Diseases of the Nose and Throat, Victoria Infirmary, Glasgow.

SEVERAL years ago a little boy was brought to me because his speech was so nasal in quality as to be almost unintelligible. His nose was free, the conformation of his pharynx normal, and his palate active, but on palpating for adenoids my finger passed into his naso-pharynx without encountering the least resistance from the reflex contraction of the soft palate. This strikingly unusual tactile sensation led to a recognition of the true nature of the case, and of others less marked which I had previously seen. Since then I have met with various degrees of insufficiency of the palate, an account of which, with the elucidation of some points relative thereto, may not be without interest, as very little in English has been written on the subject, and as the condition is not even mentioned in the majority of our text-books.

I desire in the first place to express my obligation to those who have contributed to our knowledge of this affection. Lermoyez is entitled to the credit of having published in 1892 an excellent monograph, in which, for the first time, the subject was dealt with lucidly and in detail. This was based on one case of his own and eleven previously reported under various designations by other writers (Roux, Demarquay, Passavant [3], Trélat [2], Notta, Ehrmann, Wolff, and Kayser). H. Gutzmann, with an exceptionally large experience of disorders of speech, has made several

valuable contributions to the subject. Bonnes has written a lengthy thesis on rhinolalia, in which he records one case observed by himself and refers to several of Garel's. In addition, the following have reported one or more cases of insufficiency: Castex (1), Egger (2), Kaminski (3), Philip (1), Rouvillois (1), Botey (4), and Stimson (1).

DEFINITION.

The palate may be unable from various causes to shut off the pharynx from the naso-pharynx; it may be cleft, paralysed, perforated, or cicatricially contracted, and in all of these conditions it may be said to be insufficient. Lermoyez, who introduced the term "insufficiency of the palate," applied it solely to a congenital affection in which the soft palate, although normal in appearance and moving freely, does not reach the posterior wall of the pharynx, and as a consequence the speech acquires an open nasal quality (rhinolalia aperta). This description is now too restricted, further observation having shown that the soft palate is not always normal in appearance or mobility, and that the speech may be perfect although closure of the naso-pharynx from the mouth is incomplete. I would therefore define insufficiency of the palate as a congenital affection, in which the soft palate does not effect physiological closure of the naso-pharynx from the oral cavity and rhinolalia aperta results.

SYMPTOMS.

Cases of insufficiency of the palate may come under our notice in one of two ways: We may be consulted on account of the indistinct speech—I have had ten such cases, only two of which were in adults—or, the rhinolalia aperta may attract attention to the palate in patients complaining of symptoms other than those due to insufficiency; in nine cases I have thus detected the condition.

Speech.—The outstanding symptom of insufficiency of the palate is open nasal speech. This varies from a slight and scarcely noticeable degree to one so pronounced as to render the patient difficultly comprehensible. The defect is present from the time the child begins to speak, but, as a rule, tends to diminish as he grows older. The continual endeavour to articulate clearly evidently leads to increased activity of the palatal muscles, and consequently to diminished insufficiency.

Of all the letters, only *m* and *n* can be normally pronounced in marked insufficiency of the palate, because during their production alone is an open pathway between the mouth and nose necessary. For the perfect rendering of the other letters the soft palate must be raised so as to approximate it to the posterior pharyngeal wall, and thus completely, or in a large measure, close off the nasal chambers. In insufficiency this function is imperfectly fulfilled, and these letters therefore acquire an open nasal tone.

Rhinolalia aperta may be the sole defect, the individual letters being perfectly articulated, or, in addition, certain letters may be defectively formed or replaced by sounds more easily produced. The letters I have noticed to be most faultily pronounced have been *k, g, j, q*, and less so *s, c, p, t, d*. The disturbance of the speech is by no means proportionate to the degree of insufficiency.

All cases are not alike as regards the letters involved. Lermoyez found that all the vowels acquired a nasal timbre, *a, e, o*, etc., becoming *an, en, ou*; of the consonants, *j, ch, f*, and especially *s*, were unintelligible, while *k* and *g* were pronounced very well. In Castex's patient, *c, g, h, j, s, x*, and *z* were affected. In Egger's Case 2, besides the vowels becoming nasal, *q, k, g* were gone, *d* was said with difficulty, *t* fairly well, and *f, r, l* were unaltered. Philip's patient could say most of the consonants; *q, k, g* were slightly affected, the sibilants were softer, and the vowels had a nasal quality. Gutzmann found the vowels to have a marked nasal sound—*a* least, *o* and *e* more, and *u* and *i* most; *p, t, k* seemed to be present in most cases, but the explosive sound was produced in the larynx; *b, d, g* were often replaced by *m, n, u*; *s* was always badly pronounced and accompanied by nasal sounds; *r* was absent, or formed far back in the throat, and *l* was usually present and normal.

There is another defect of speech, the connection of which with palatine insufficiency has been overlooked, namely, sigmatismus. Of all the letters, *s* has been the most imperfectly pronounced by two of my patients, while in a third patient the articulation of the majority of the consonants was accompanied by a slight hissing through the nose. In these three patients the insufficiency was of the muscular type (see below). Coën has applied the term "nasal sigmatismus" to the condition in which, during the pronunciation of *s*, the air is expelled through the nose instead of through the mouth. I think that this term might well include the defect in the third patient above referred to, in which the sibilant sound obtruded itself so markedly.

It is possible that an expert in phonetics might be able to differentiate the speech defects in the two varieties of insufficiency. I am not qualified to do so, but I may venture to state that it has seemed to be more a matter of an open nasal tone in submucous cleft palate, while in muscular insufficiency there was in addition the imperfect formation of certain letters.

The constantly open pathway between the pharynx and nose may give rise to various other disabilities. While speaking it may be necessary to inspire at unduly short intervals owing to the abnormally large amount of air expended in articulating; reading and speaking thus quickly cause fatigue. Some patients cannot whistle, hiss, or blow out a candle unless held near the lips. The blowing power can be increased by pinching the nostrils. Not infrequently instinctive efforts are made to produce a similar effect by puckering the upper lip and flattening the alæ; hence the grimaces sometimes observed in subjects of rhinolalia aperta.

Deglutition.—Deglutition causes no trouble, contrary to what might be expected. In not one of my cases had regurgitation through the nose of liquids or semi-solids taken place at any period of life. Several, however, were unable to drink quickly, and one boy could cause regurgitation when he wished.

Egger and Castex state that if their patients spoke or laughed while eating, particles of food occasionally passed into the nose, but in the majority of cases reported the absence of all trouble with deglutition has been remarked.

It is thus evident that complete closure of the nose from the pharynx is not necessary in order to prevent regurgitation. I have seen several cases of shortening of the soft palate due to syphilitic ulceration or cicatrisation in which regurgitation was likewise absent. The superior constrictor, therefore, seems to play an important *rôle* in preventing the food from passing into the nose. When this muscle and the palato-pharyngei are paralysed, as in diphtheria, regurgitation is marked; this may also take place if the action of the constrictor is hampered, *e.g.* owing to a malignant growth at the upper end of the œsophagus.

Hearing.—The ears are found to be involved very frequently in insufficiency of the palate. There was no history of an aural affection in only four of my nineteen cases. Two suffered from recurrent earache. The remaining thirteen (seven with submucous cleft palate, six with muscular insufficiency) presented an appreciable degree of deafness, to which in six were occasionally super-added attacks of earache and otorrhœa. Examination of the ears

revealed in most instances retraction and thickening of the tympanic membrane; in five cases, perforation on one or both sides; and in one case, a healed perforation. On the whole, aural complications were more frequent and more severe in the variety of insufficiency due to submucous cleft palate. Castex's patient was slightly deaf, his tympanic membranes were semi-opaque, and in infancy he had otorrhœa. In Philip's patient the right drum presented a cicatrix.

The frequency of affections of the ear in those with insufficiency of the palate is probably due to two causes, namely, defective ventilation of the middle-ear owing to the restricted action of the levator and tensor palati, and extension of inflammation from the naso-pharynx; this cavity, when abnormally spacious, seems liable, together with the posterior nares, to chronic catarrh.

In this connection reference may be made to an interesting paper by Lannois on the state of the middle ear in cleft palate. He points out that persons with cleft palate very frequently suffer from troubles of audition and lesions of the middle ear, and that these may be due to congenital anomalies of the tympanum and ossicles, to congenital or acquired malformations of the Eustachian tube, but oftenest to chronic inflammation of the nasal fossæ and naso-pharynx.

Mental and Physical Development.—Four of my patients with insufficiency of the palate were much below the average in intelligence and physical development. One patient was in the third standard, while her twin sister, who was a head taller and more robust, was in the sixth. A second was mentally defective and had a patent foramen ovale. A third was very small at birth, had developed slowly, was late of beginning to speak, and was exceedingly dull at school. The fourth, although eighteen, looked only fourteen, was listless and puny, and had not passed the second standard, while her sister aged nine was as advanced. In the last two patients there was submucous cleavage of the palate. One of Gutzmann's patients was a cretin with feeble mind and body. It would therefore seem that in some cases the insufficiency of the palate is one manifestation of general backward development.

TWO VARIETIES OF CONGENITAL INSUFFICIENCY OF THE PALATE.

In the majority of cases of palatal insufficiency there is nothing in the appearance of the pharynx at rest to indicate insufficiency. This is discovered, as a rule, only after the nasal speech has led

one to test the mobility of the soft palate. The inability of the latter to shut off the naso-pharynx then becomes evident, and on further examination it is found that one of two, or both, conditions are present to account for the imperfect closure. Either the palate is short and the distance between it and the posterior pharyngeal wall is relatively great, or the pharynx is of normal depth and the palate of normal length but its movement is defective, or the two conditions are associated. The first type of insufficiency arises chiefly in consequence of imperfect development of the hard and soft palate (as will be shown), and may for convenience be termed *submucous cleft palate*; the cause of the second lies in the soft palate alone, and it may be distinguished as *congenital muscular insufficiency of the palate*.

I have met with nineteen cases of insufficiency of the palate, of which eight (five males, three females) were due to submucous cleavage, and eleven (one male, ten females) to muscular insufficiency. The ages of the patients are noted in the tables (see "Measurements").

I. SUBMUCOUS CLEFT PALATE.

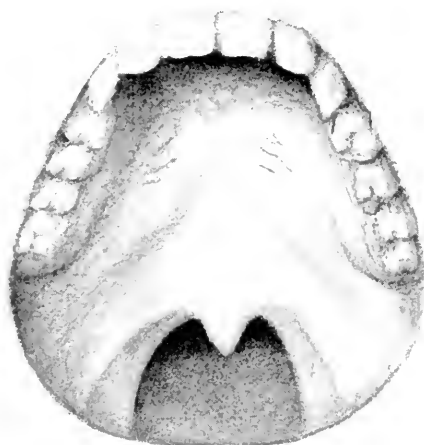
Examination.

If we remember that in the affection under consideration we have to deal with a cleft of the soft palate which is continued for a greater or less distance into the hard palate, and is bridged over by mucous membrane, we shall more readily interpret the appearances met with.

Hard Palate.—As a rule, nothing abnormal is evident during quiet respiration. On causing the patient to raise the soft palate, however, the median part of the posterior edge of the hard palate is usually brought into relief owing to the thinness of the investing tissues. Palpation gives an exact impression as to the contour of this edge. In place of the posterior nasal spine projecting backwards we feel a rounded or angular recess, the form of which varies. In my most marked case of insufficiency a continuous concave margin can be felt all the way across; the condition probably closely resembles that shown in Fig. 3. In another case a similar concave margin is found, but at its deepest part, *i. e.* in the middle line, a notch 5 mm. deep and 3 mm. wide can be distinguished. In my other cases, and likely in the majority of all cases, the loss of bony tissue is represented by an angular notch. The apex of the notch is in the middle line, and its sides are formed by the

PLATE I.

FIG. 1.



TO ILLUSTRATE DR. A. BROWN KELLY'S PAPER ON CONGENITAL INSUFFICIENCY OF
THE PALATE.

divergence of sharp bony edges, which at the base of the notch turn abruptly outwards and are lost in the soft tissues. A little bony knob, palatal tubercle, can usually be felt on the under surface of the hard palate at each side of the widest part of the notch. The angle enclosed is generally about 45° , but occasionally it is much greater. The length of the notch from base to apex in two of my patients measured 10 mm. and 14 mm. respectively; on an average it may be taken to be 6 mm. Botey and Rouvillois report cases in which it was 10 mm.; in Wolff's case it was 15 mm.

Normally, a line drawn between the posterior ends of the alveolus corresponds nearly with the posterior edge of the hard palate. In several of my cases as much as could be felt of the hard palate was markedly in front of this line. An actual shortening of the hard palate is therefore present in bony insufficiency, and not mere notching of a palate of normal length; the latter condition may also occur, and to it reference will be made later.

The mucous membrane in the neighbourhood of the notch may present a slightly honeycombed or scarred aspect. Closer examination shows this to be produced by two or three short furrows on each side, running backwards and outwards. This furrowing was observed in five of my cases; on the other hand, it may exist independently of notching or insufficiency. Lermoyez draws attention to a whitish line which sometimes runs along the middle of the palate like a raphé, passes through or bifurcates to enclose a small, pale, oval depression at the junction of hard and soft palate, and is continued on to the soft palate. I have found this appearance to be neither constant in, nor peculiar to, bony insufficiency of the palate.

Soft Palate.—The abnormalities in the soft palate are not such as to obtrude themselves on one's notice, nevertheless, in the more marked cases quite a characteristic aspect is presented (Fig. 1). The soft palate appears short, and does not reach so far back or hang so low as ordinarily; it may also seem stretched transversely. A thick fleshy mass is seen, best on phonation, on each side extending from the margin of the hard palate backwards and outwards, and becoming lost in the substance of the anterior faucial pillar. These masses may be regarded, I think, as the non-united mesial ends of the muscles of the soft palate. The tissue occupying the interval between them is pale, thin, and has somewhat the appearance of a wide raphé. On causing the patient to raise the palate the chief retraction takes place along the inner border of

the fleshy masses mentioned, while the mesial part of the palate and the uvula are at the same time passively dragged up.

This mode of elevation is quite unusual. Normally, on phonation, retching, etc., the palate is most elevated about 5 or 6 mm. above the base of the uvula. This spot, indicated by a little dome-shaped depression, marks the principal interlacing of the fibres of the levator and tensor palati with those of the palato-glossus and palato-pharyngeus. Gutzmann, who has drawn special attention to the place of maximum retraction, reports that in two of his cases of insufficiency it was situated, not above, but directly at the base of the uvula. My experience has differed from Gutzmann's; in all of my cases of submucous cleft palate there has been no evident retraction at or near the base of the uvula. This abnormal manner of elevating the palate seems to me to largely contribute to the insufficiency in the cases under consideration. Hence, in bony insufficiency, muscular insufficiency, as a rule, also exists.

Uvula.—Lernoyez stated that the uvula was bifid in all cases, but subsequent writers have disproved this. In three of my eight cases there was complete cleavage of the uvula; in one of these the cleft was continued into the soft palate for about 3 mm.; in another the left half hung in front of the right half. In all my cases the uvula was rudimentary.

Pillars of the Fauces.—The anterior pillars appeared to be stretched and capable of limiting elevation of the palate in two of my cases. In another the posterior pillars seemed unduly tense. The direction of the anterior pillars in my worst case was striking in that they passed forwards besides upwards and inwards. Trélat and Castex noted an apparent atrophy of the posterior faucial pillars in their patients.

Naso-pharynx.—The distance between the soft palate and posterior pharyngeal wall is greater than usual (see "Measurements"). Insufficiency becomes more apparent on exciting contraction, which, even when violent, fails to bring about the closure of the naso-pharynx. According to Botey, apposition can be effected in the majority of cases by aid of a probe, proving that want of contractile energy has more influence than shortness of the palate in producing insufficiency. On the contrary, in my most marked cases it was impossible to push the soft palate or uvula owing to their shortness nearly into contact with the posterior pharyngeal wall.

Posterior rhinoscopy is easy. Adenoids are small or absent. The posterior ends of the inferior turbinates are almost invariably

enlarged. One should also note the size of Passavant's cushion (see "Anatomy"). I regret that this has been done in too few of my cases to allow of general deductions being drawn. It was only recently that I recognised the important part that may be played by this structure in compensating an obviously too short palate and in preventing insufficiency.

On palpation the finger is not gripped as usual by the reflex contraction of the soft palate, but passes up, encountering little or no resistance. The soft palate feels thin, as if stretched transversely, and gives the impression that it would be readily torn; on its upper surface a thicker mass may be felt on each side with a thin tract between indicating imperfect union of the two halves.

Posterior Edge of the Septum.—This feels normal in its upper part; on following it downwards, however, it will be found to pass forward so as to form with the palate a recess too small to admit the finger. This condition is a minor degree of that present in cleft palate, in which one may see the posterior edge of the septum passing almost horizontally from the anterior nasal spine to the basisphenoid, the postero-inferior part of the vomer being undeveloped. Wolff, Lermoyez, Egger, Castex, Philip, and Rouvillois mention that in their cases the posterior border of the septum was more oblique than normal.

The direction of the posterior edge of the vomer in relation to the principal plane of the hard palate will be found to present considerable variations in the normal skull. Without making an extensive search I have met with the undernoted types.

FIG. 2.

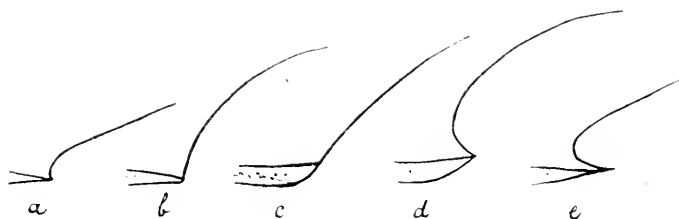


FIG. 2.—*a.* From a child; the posterior edge of the septum is more horizontal than in the adult. *b.* Common type; the edge is slightly concave in its whole length. *c.* The posterior nasal spine is turned upwards so that its lower surface passes imperceptibly into the septal edge. *d.* Deep recess in lower part of septal edge. *e.* From case with notch 4 mm. deep in posterior edge of hard palate. The bottom of the recess in the septum is 10 mm. in front

of the dotted line, which indicates the position of the main part of the posterior edge of the palate. A more marked degree of the last type is present in cases of bony insufficiency of the palate.

Prof. Hopmann, by numerous examinations carried out during a period of many years, has added much to our exact knowledge of the choanal region. He has investigated the length of the septum and has proved that it is abnormally short in ozaena patients. Apart from these he refers to instances in which he found the concavity of the posterior edge of the septum from 5 to 25 mm. in front of the choanal plane (formed under normal conditions by the prominent salpingo-palatine folds and posterior border of the vomer). In such cases the posterior parts of the middle and inferior turbinates pass backwards beyond the septum and appear free in the naso-pharynx. Hopmann makes no mention of insufficiency or of notching of the hard palate. He infers, however, that the dwarfed state of the vomer is due to imperfect development of the palate bones, and as the latter may vary greatly in their antero-posterior diameter, corresponding variations in the depth of the septum may also be expected.

In at least three of my patients the posterior edge of the septum reached noticeably far forward. In one of these, on looking along the left nasal fossa it was possible to see the right Eustachian cushion and salpingo-palatine fold. The measurements in this case (a woman) were as follows :

- I. From point of nose to posterior pharyngeal wall . 90 mm.
- II. " " " edge of septum . 50 mm.
- III. Depth of naso-pharynx therefore . . . 40 mm.

If I = 100, the ratio will be 100 : 55 : 44.

Hopmann has calculated that the average ratio in women is 100 : 80 : 20. He reports as striking instances of the vomer being short or seated far forward (*Vorlagerung des Vomer*) two cases (women) with the following measurements :

I = 93, II = 56, III = 37 (100 : 60 : 40).

I = 92, II = 60, III = 30 (100 : 65 : 35).

Hare-lip.—In one of Passavant's patients and in Ehrmann's patient a left hare-lip was present. A corresponding scar should also be sought.

Absence of Teeth.—Egger found that the superior lateral incisors were absent in both his cases; this he regards as a sign of degeneration.

Supernumerary Teeth.—Warnekros has recently adduced further proof in support of the view that a supernumerary tooth by delay-

ing union is the cause of a cleft in the palate or lip. The cleft, he states, may involve the soft or hard palate, or lip, or may be recognisable only as a scar in the lip; there may be a cleft in any of these situations while closure in the others has taken place. Confirmation is established by X-ray pictures. He has also found a tendency to supernumerary teeth in families in which clefts were observed.

The presence of supernumerary teeth has not hitherto been reported in cases of insufficiency of the palate. In view of the results of Warnekros's investigations I was led to look for them in patients with submucous cleft palate. The association was found in only one of the cases examined, but is probably commoner, as the tooth may readily escape notice. In the case referred to the right upper canine and first bicuspid were only slightly erupted, while opposite the space between them, on the outer side of the alveolus, the labial surface of a fairly large tooth appeared.

I have also looked at three bony palates with supernumerary teeth in the Museum of the Royal College of Surgeons, London, but these presented no cleavage or notching.

SUBMUCOUS CLEFT PALATE WITHOUT INSUFFICIENCY.

A minor degree of submucous cleft palate but without insufficiency not infrequently exists. If in persons with bifid uvula the posterior edge of the hard palate be palpated an angular notch or rounded gap in place of the posterior nasal spine will be found in a fairly large proportion. In ninety cases of bifid uvula, including all degrees, the angular gap referred to was met with in eighteen instances, in the great majority of which bifidity was nearly complete. These, together with the eight cases in which insufficiency was present, make a total of twenty-six cases of submucous cleft palate that have come under my care.

Speech has been taken as the distinguishing test. When this has been normal, the case has been placed in the class under consideration; when there has been rhinolalia aperta it has been grouped with the cases of insufficiency.

The other symptoms and the objective conditions that have been described as generally accompanying submucous cleft palate with insufficiency are also found, but in a less degree in the variety without insufficiency.

The cleft in the hard palate varies in size from an indentation

that can be barely felt to a large rounded gap; as a rule it has the form of an angular notch. The soft palate approaches the normal in aspect and in mode of elevation, and there is not the suggestion of submnous cleavage presented by the more marked condition, as shown in Fig. 1.

By contrasting the appearances found in the two classes of cases light is shed on the aetiology of insufficiency. The depth of the notch has a determining influence, as will be shown when dealing with the measurement of the hard palate. Probably the factor that oftenest saves the palate from being insufficient is the vigorous and well-directed elevation of the soft palate. Much more rarely the insufficiency is compensated by Passavant's cushion. I have had one striking case in which, when the palate was fully raised, its edge was still 11 mm. from the posterior pharyngeal wall; there was, however, no rhinolalia aperta, physiological sufficiency being secured by a very prominent Passavant's cushion.

Anatomy.

Hard Palate.—The anatomical condition of the bony palate in insufficiency has, so far as I know, not been described. With the object of finding a specimen presenting notching I obtained the kind permission of Prof. Cleland, formerly of Glasgow University, the late Prof. Cunningham, of Edinburgh University, and Prof. Arthur Keith, Conservator of the Royal College of Surgeons Museum, London, to look over the collections of human crania under their care.

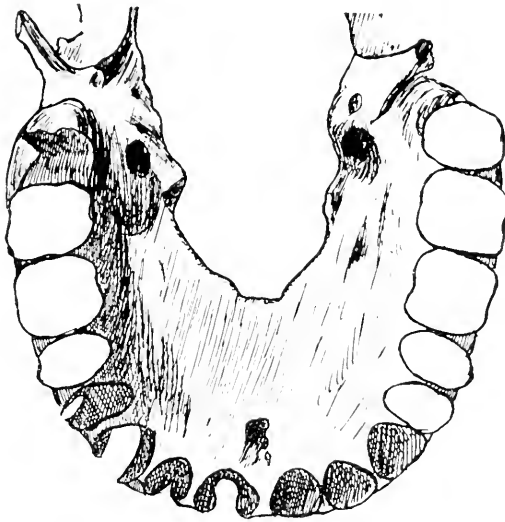
Altogether over 3500 skulls were examined. Amongst these I found two presenting a degree of defective development of the posterior part of the hard palate corresponding to that associated with marked insufficiency.

FIG. 3 (R.C.S.E. 1141 Black).—The subject was an imbecile from birth. The bony palate is defective in the middle line as far forward as the posterior edge of the second premolar tooth. The gap forms an open angle anteriorly and quickly attains a width of 20 mm. Its edges are rounded and asymmetrical. The distance from the anterior extremity of the notch to the middle of the alveolus, measured according to the method described below, amounts to 31 mm.

FIG. 4 (R.C.S.E. 1152 Black).—The gap in this specimen is U-shaped, almost symmetrical, averages 18 mm. in width, and reaches a line drawn between the second premolars. The length of the hard palate in front of it is 23 mm.

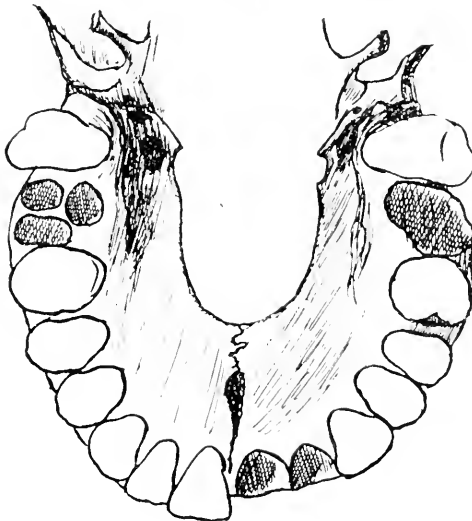
The question may be raised as to whether these imperfect palates were not associated with an ordinary or open, rather than

FIG. 3.



a submucons, cleft. Possibly they were, but the palatal defect in submucons cleavage, as determined by palpation, measurement,

FIG. 4.



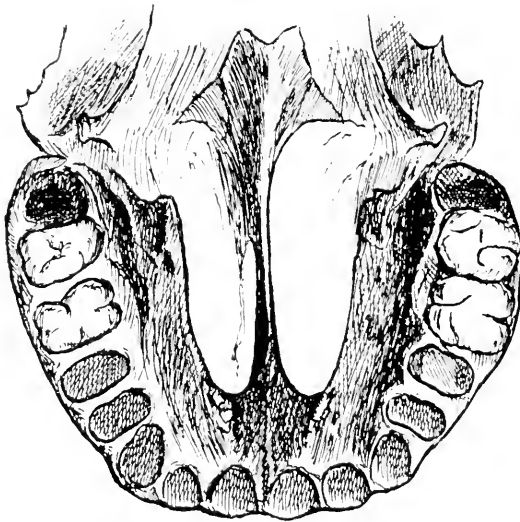
and X-ray examination, corresponds so closely to that in the specimens depicted that one is justified in regarding these as correct

representations of the state of the hard palate in the disease under consideration.

A third specimen was found in the skull of a young woman of about the third century A.D., Fig. 5 (R.C.S.E. Nubian Pathol. Collection, No. 210). A congenital cleft involves nearly the whole of the palate. The length of the hard palate is barely 20 mm.: the gap where widest measures 25 mm. In this case probably an open cleft was present, for the hard palate is shorter than in any recorded case of insufficiency.

Judging from the size of the cleft felt in my patients, only two had as extensive a defect as in the first two specimens described.

FIG. 5.



In most of the others the notch seemed to have an acute angle, and extended only as far forward as a transverse line passing through the middle of the first molars. No skull was found with a gap of corresponding size.

On mentioning to Prof. Keith the object of my search, he informed me that the defect in question is not uncommon in the gorilla, and kindly showed me two skulls in which a cleft separated the palate bones and was continued for a short distance between the palate plates of the superior maxillæ, Fig. 6 (R.C.S.E. 29). It is a cleft of this type that is probably present in cases of moderate bony insufficiency, but as yet the anatomical proof is wanting.

Of slighter degrees of cleavage of the bony palate many examples were found. These, in all likelihood, did not cause

FIG. 6.

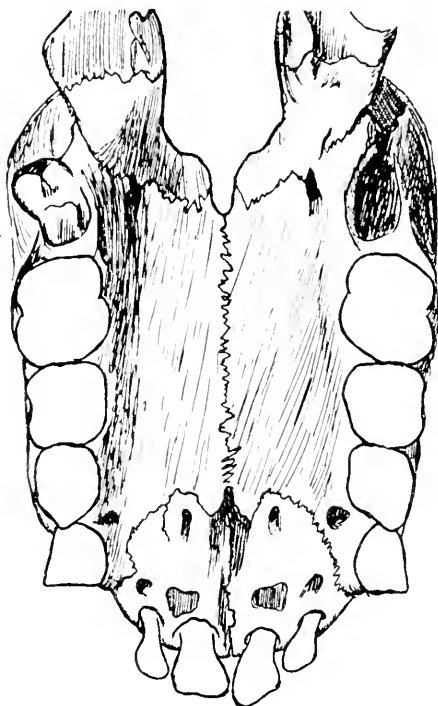
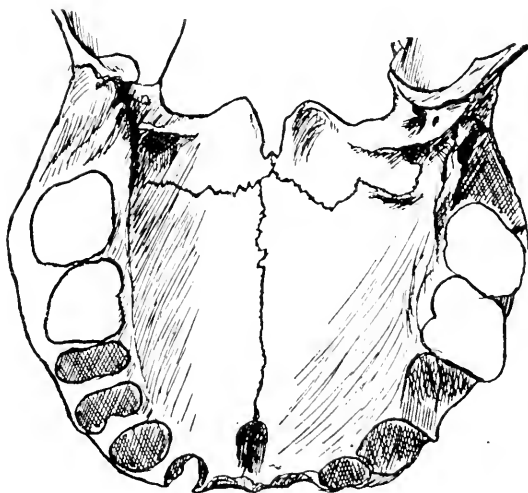


FIG. 7.



insufficiency. The more marked approach the type described (p. 291) in which the notching of the hard palate is detected from

its association with bifidity of the uvula. Sketches of several of these are here reproduced, Figs. 7 (R.C.S.E. 1134 Red), 8 (Glas. Univ.), 9 (R.C.S.E.), and 10 (Edin. Univ.).

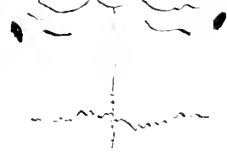
FIG. 8.



FIG. 9.

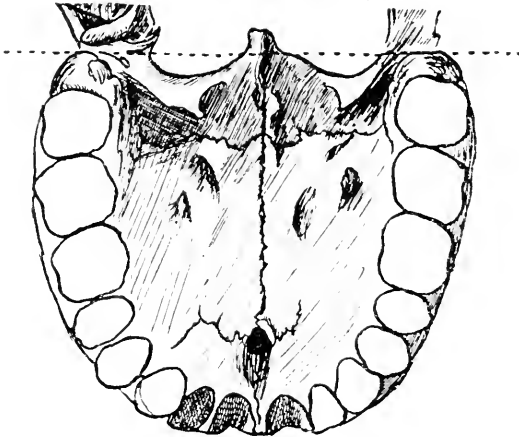


FIG. 10.



If a line be drawn between the posterior extremities of the alveolar arch, as a rule the posterior nasal spine will be found to

FIG. 11.

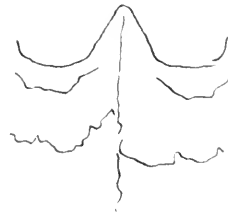


project 2 or 3 mm. behind it, as in Fig. 11 (R.C.S.E. 1585 Red), which may be taken as a standard. In those specimens with slight

FIG. 12.



FIG. 13.



cleavage the margins of the cleft usually extend back to or beyond the base line, and there is thus no real shortening of the hard palate.

Apart from notching several obviously short palates were met

with in which the posterior edge of the hard palate lay in front of the base line (Fig. 12, E.U.).

The degree of prominence and shape of the posterior nasal spine were found to vary greatly. It might be long and sharp (Fig. 13, G.U.), prominent, but blunted (Fig. 14, G.U.); it might be represented merely by a more or less marked convexity of the

FIG. 14.

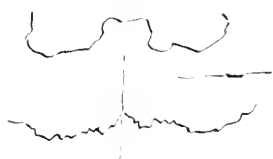


FIG. 15.



FIG. 16.



posterior margin of the hard palate (Fig. 15, G.U.), or it might be asymmetrical (Fig. 16, G.U.).

The palatal processes of the palate bones presented other varia-

FIG. 17.



FIG. 18.



tions. They were met with unduly broad (Fig. 17, G.U.), or narrow (Fig. 18, G.U.), or asymmetrical (Fig. 19, R.C.S.E.); some were smooth while others had marked ridges and tuberosities (Fig. 11),

FIG. 19.



FIG. 20.



and occasionally they were so thinned as to be perforated (Fig. 20, E.U.) or notched (Fig. 21, R.C.S.E., 861 Red).

Interesting and rare variations were those in which the posterior nasal spine was formed on one (Fig. 22, R.C.S.E., 960 Red) or both sides (Fig. 23, E.U.) by the continuation backwards of the superior maxillæ, which thus prevented the palate bones from meeting in the middle line. An incomplete degree of this variation in which

the superior maxillæ almost reached the posterior nasal spine was also found (Fig. 24, G.U.).

Lastly, the palatal process on one side occasionally arched lower

FIG. 21.

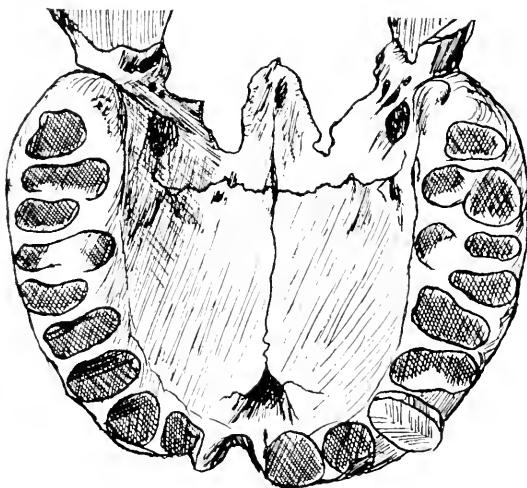
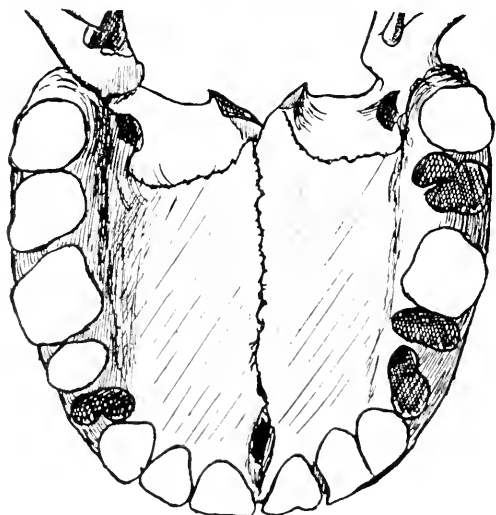


FIG. 22.



than on the other; the posterior nares were in consequence asymmetrical (Fig. 25, G.U.).

The defect in the hard palate was also examined by means of X-ray photographs. Owing to the manner in which it was necessary

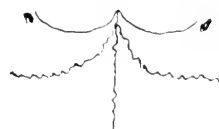
to take these, with the tube directed downwards and backwards, and the film bent so as to follow the arch of the palate, the relative size of the parts is not quite correctly represented; nevertheless, a good idea of the shape of the notch is obtained. This confirms the opinion expressed that the abnormality in submucous cleft palate is similar to that shown in Figs. 3 and 4.

Fig. 26 is from a skiagram of the palate in Case 3 (see "Measurements in Cases of Submucous Cleft Palate with Insufficiency"). The

FIG. 23.



FIG. 24.



incisors are shown in the greater part of their length. The hard palate in front of the defect is foreshortened. The latter is divided from before backwards by the septum, which was much deviated to the right.

Soft Palate.—I regret that I have been unable to find a specimen showing the anatomical condition of the soft palate in

FIG. 25.



submucous cleft palate. The examination of patients has led me to believe that an arrangement as under-noted exists. The gap in the bony palate is occupied on each side by a fleshy mass, which on phonation stands out so that it can be traced backwards and outwards to the corresponding anterior faucial pillar. These fleshy masses are composed presumably of the levator, tensor, and palatoglossus muscles which have failed to unite in the middle line. A thin layer of tissue occupies the space between them. On causing the patient to elevate the palate the maximum retraction is not, as normally, above the base of the uvula, but along the

inner margin of the muscular bundles, while the median part is inert.

Posterior and Lateral Walls of the Pharynx.—If we study in the normal subject the manner of effecting the physiological closure of the naso-pharynx from the mouth, in addition to the elevation of the soft palate, which is by far the most important factor, we shall find two others, namely, the contraction of the superior constrictor and of the palato-pharyngei. On phonation, and especially on retching, the upper part of the superior constrictor rolls upwards, and owing to the fixation of its superior attachment at the base of the skull a more or less prominent fold—Passavant's cushion—is formed across the posterior wall at a slightly higher level than the most retracted part of the soft palate. This upward movement, with the consequent formation of Passavant's cushion, takes place only in about every fifth individual. The palato-pharyngei cause by their contraction narrowing of the naso-pharyngeal opening, and by lateral compression, wrinkling, and shortening of Passavant's cushion when present. The superior constrictor and palato-pharyngei are thus capable of more or less reducing the passage between the mouth and naso-pharynx and of preventing insufficiency, as I have observed in one case, by compensating an unduly short soft palate.

(*To be continued.*)

THE OTO-LARYNGOLOGICAL LIBRARY OF THE COMMUNAL HOSPITAL IN COPENHAGEN.

THE Oto-Laryngological Library attached to the Ear and Throat Clinic of the Communal Hospital in Copenhagen has succeeded in obtaining a collection of about 3000 articles and reprints besides about 200 volumes of standard books, monographies, etc., on oto-laryngology, mostly gathered through the kindness of many *confrères* abroad.

I hereby take the opportunity of thanking my *confrères* in the different countries very heartily for their many gifts to the said library, especially those whom I have not been able to thank personally from various causes. At the same time I take the liberty of asking the different authors on oto-laryngology in the future to kindly send their reprints, books, etc., to the library.

The library has a number of double reprints which are at the disposal of other similar institutions.

HOLGER MYGIND.

**DERMATITIS OF THE VESTIBULE OF THE NOSE, PROBABLY
DUE TO MENTHOL.**

ANNOTATION.

DURING last year I prescribed for a number of my patients a proprietary nasal spray, which, according to the published formula, was made up as follows: Menthol, $2\frac{1}{2}$ per cent.; camphor, $2\frac{1}{2}$ per cent.; chloretone, 1 per cent.; ol. cinnamon, 1 per cent. in liquid paraffin.

I had previously tried it repeatedly on myself for catarrh without any deleterious effect, and, indeed, with considerable benefit. Much to my surprise and annoyance some half-dozen of the patients who were using the spray developed a somewhat acute eczema of the skin of the nasal vestibule and of the upper lip. The eczema presented no unusual characters; smarting and burning were complained of; reddening of the skin was observed, with some infiltration and cracking, together with the exudation of a serous discharge. It showed no tendency to spread to the cheeks.

Naturally enough, in the first case in which the dermatitis showed itself the true explanation of the attack did not occur to me, particularly as the patient was suffering from ethmoidal and frontal sinus suppuration, with considerable purulent discharge from the nose. But as one case after another presented itself, each manifesting the same type of eczema, the suspicion gradually dawned upon me that some condition common to them all was responsible for the outbreak. A reference to the treatment that had been employed at once led to the conclusion that the spray was responsible, and this was clearly proved when in all the cases save one the eczema quickly disappeared on changing the spray.

The question now arose, Which of the ingredients in the formula was to be regarded as the irritant? From a considerable experience of the benefits of menthol and camphor I was at first inclined to ascribe the guilt to the chloretone or to the cinnamon oil, with which, as nasal remedies, I was less familiar. But in order to test the matter satisfactorily I obtained from the druggist's who manufactured the proprietary article a series of bottles each containing one of the ingredients alone, dissolved in liquid paraffin, and proceeded to try their effect upon myself and a friend. It soon became evident to us that the chloretone and the camphor were alike absolutely bland and unirritating, both to the interior of the nose and to the skin of the vestibule and lip. After using the

menthol solution, on the other hand, a distinct sense of smarting and burning, quite different from the usual cool tingling action of the substance, was perceptible, partly within the nose, but more markedly in the skin. With reference to the cinnamon oil, also, one of us experienced a certain amount of irritation, but not to any decided extent, and very much less severe than that which followed the use of the menthol.

The next step was to determine why the menthol, which is so widely employed as an intra-nasal application without any harm resulting, should have given rise to eczema when used in this particular formula. And, after the source of the supply had been investigated, the conclusion came to was that the fault lay in the percentage strength of the remedy being too high; $2\frac{1}{2}$ per cent. is equal to about 10 or 11 gr. to the ounce, and the strength which is generally employed is only from 4 to 5 gr.

This conclusion was supported by the fact that a number of cases of eczema of the lips or chin had been reported by Galewska (1) as caused by the use of an aromatic dentifrice, which contained peppermint oil as a flavouring agent. Menthol is a stearoptine which is obtained from peppermint oil (2).

It is interesting to note in passing that the ancient Egyptian physicians who compiled the Ebers Papyrus prescribed peppermint rubbed up in dates to form a paste for the treatment of "sneezing" (3).

With respect to the oil of cinnamon, although its effect in the strength of 1 per cent. was found to be only slightly irritating, still, when combined with the menthol, we could not regard it as altogether innocuous, especially when we remembered that the essential oils in general frequently act as cutaneous irritants, particularly to delicate skins.

As I have already said, all the cases got quickly well when the spray was stopped save one. This exception, for no very obvious reason, proved rather obstinate, and although her eczema was ultimately got rid of for a time, the patient—a woman—has recently had a recurrence of the skin trouble without having again used the spray.

As a consequence of my representations the formula has recently been altered by the makers of the spray, the percentage of the menthol and cinnamon oil being reduced to 1 per cent and $\frac{1}{4}$ per cent. respectively. So far the new spray has not shown any sign of setting up irritation.

Dan McKenzie.

REFERENCES.

- (1) "Apotheke Zeitung," quoted in *The Prescriber*, January, 1907.
(2) BINZ.—"Lectures on Pharmacology," *New Syd. Soc. Trans.*, London, 1895, vol. i, p. 372.
(3) "Papyros Ebers." German translation, by H. Joachim. Berlin, 1890, p. 165.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF
MEDICINE—LARYNGOLOGICAL SECTION.

Meeting on Friday, May 6, 1910.

DR. DUNDAS GRANT, *President, in the Chair.*

(Abstract report by DR. DAN MCKENZIE.)

The following cases and specimens were shown :

A PENNY REMOVED FROM THE GULLET OF A YOUNG GIRL.

BY MR. HERBERT TILLEY.

Patient, aged fourteen, swallowed a penny, and applied to hospital thirteen days later because of difficulty in swallowing solid food. Coin was easily detected when the patient's neck was "screened." Under chloroform narcosis, dorsal position, head slightly extended, a medium-size bronchoscope tube was passed and coin detected just below the cricoid region of œsophagus. Mucous membrane around the penny was very congested, in parts slightly ulcerated. After much difficulty in getting an instrument which would firmly grip the coin, the latter was finally removed with a Killian's long-toothed forceps. The patient left the hospital four days later.

DR. WM. HILL was particularly interested in the ulceration which the coin had set up. He had seen a case in which, after ten days, there was great ulceration, and Mr. Graham had recently had a case in which a halfpenny was so embedded in the hypopharynx that but little of the coin could be seen. He recalled another case where a coin lodged edge-wise in the œsophagus, ulcerated through into the trachea in five days and caused death. This was before the X-rays had been discovered, and in the efforts to remove the foreign body the bougie had passed down

each side of it. It should be noted that safety was not obtained by the passage of the coin into the stomach, for, as the records showed, efforts at vomiting might lead to it being arrested in the œsophagus. It was remarkable that, although the pharyngeal orifice of the gullet was the narrowest part of the tube, coins often slipped past this constriction and were arrested lower down.

MR. SCANES SPICER asked if the exact situation of the coin had been determined by measurement. Was it over or under twenty-five centimetres from the teeth? He agreed with Dr. Hill that it was remarkable how often foreign bodies passed the upper sphincter. They were caught, as a rule, at a spot where the pressure of the dorsal vertebræ, thyroid and great vessels caused a narrowing of the œsophagus. This spot was also a favourite situation for malignant disease.

Dr. JOHNSON HORNE, in view of the swelling and congestion of the mucous membrane around foreign bodies, pointed out the importance of having the case X-rayed before using the œsophagoscope.

The PRESIDENT asked whether the ulceration was so extensive that Mr. Tilley thought the old coin-catcher would have been a dangerous instrument.

Dr. H. J. DAVIS remarked that an X-ray diagnosis was not infallible, and cited in support of this opinion the case of a child with a farthing in the œsophagus, in which the X-ray appearances led to the belief that the coin was lodged in the left bronchus. The farthing remained *in situ* for a month without causing any ulceration.

Mr. HERBERT TILLEY, in reply, said that only a small segment of the circumference of the coin had been visible, and he had experienced considerable difficulty in removing it. He had considered the advisability of using the coin-catcher under inspection, but had decided against it on account of the possible difficulty of withdrawing it again. Bleeding and a copious secretion of mucus bubbling up with the tube had been his chief enemies, but he had found that bubbles could be got rid of by the simple plan of passing a sound loaded with cotton-wool soaked in ether.

CASE FOR DIAGNOSIS. MAN, AGED SIXTY-FOUR, WITH LEFT ABDUCTOR PARALYSIS.

By DR. H. J. DAVIS.

The patient appeared quite well. He lost his voice suddenly one month ago; the cords met at the vocal processes only; there was no laryngitis. X-ray photograph of chest negative. The left pulse appeared to the exhibitor to be slightly retarded (?).

The PRESIDENT said he did not suppose there would be any difference of opinion as to the fact of the paralysis of the vocal cord. It was always difficult to decide whether a cord was in a position of adduction or in the cadaveric position. There was no tracheal tugging. Perhaps Dr. Davis would report the case later.

Mr. H. BARWELL said that the cord was in the cadaveric position and it was for this reason that the cords did not meet, although the right cord crossed over the middle line when phonation was attempted. The cause of the paralysis was unknown.

A CASE OF EXCISION OF THE ENTIRE TONGUE WITH ITS RESULTS;
MAN, AGED FORTY-FIVE.

BY DR. H. J. DAVIS.

The patient was anxious for the opinion of the Section as to the possibility of an artificial tongue in his case.

He came to the hospital in May, 1909, complaining of difficulty in speaking and slight carache on the right side. There was a small fungating, but not ulcerating, growth at the base of the tongue and some laryngeal catarrh. Under iodide and mercurial treatment the growth shrank. A piece was punched out three times, and on each occasion it was reported as not cancerous; nevertheless it proved to be so, and in August, 1909, Mr. Donald Armour divided the jaw in the mid-line and removed the entire tongue. The movements of that organ were never impaired; it was nowhere adherent, and no glands were detected, but the growth invaded the base of the tongue from one side to the other, as can be seen in the specimen—a very unusual one.

The patient's present condition was as follows:

(1) He was well but thin. He spoke volubly, but was not easy to follow, and, among several peculiarities of speech, all "f"s" are pronounced "th"—*e. g.* he describes his age as "thorthy-thive," etc.

(2) "He could not bite properly"; "he loses his food as he never knows where it is in his mouth"; but food or liquids "never go down the wrong way," and this though the epiglottis was visible for $\frac{3}{4}$ in. standing vertically upwards. The anterior surface of the epiglottis was very insensitive compared with the posterior or laryngeal surface, and it would be noticed how large a buccal cavity appears without a tongue.

The exhibitor asked for opinions as to whether a rubber tongue or plate would improve the patient's speech and make his meals more comfortable. The patient could only eat mince. He swallowed best when lying down.

Mr. DONALD ARMOUR said that clinically the growth had been unlike epithelioma. It was of great size, affecting the dorsum and lateral surfaces of the tongue, and yet the tongue manifested no impairment of mobility, and there were no enlarged glands to be felt. The diagnosis was not made until, under an anæsthetic, a wedge was cut from the growth so as to include the growing border and the healthy tissue beyond it. This was submitted to several pathologists, and all agreed that the growth was epithelioma. Therefore the entire organ had to be removed, and, as it happened, so completely that the hyoid bone had to be scraped clean. Even under the anæsthetic no enlarged glands could be felt.

Mr. CHICHELE NOURSE said that according to his own account the

patient's difficulty in eating arose from the food falling into the cavity of the floor of the mouth, and on this account the speaker thought that a rubber pad might be inserted with considerable advantage. It would bring the food against the palate and so enable him to judge of its position in the mouth.

Dr. WM. HILL suggested the manufacture of a solid denture to be fixed on the floor of the mouth, and provided with a pneumatic rubber pad, which could be inflated and deflated at will.

Dr. JOHNSON HORNE commended Dr. Hill's suggestion, but thought that the rubber pad should be corrugated.

Mr. EVANS in his only experience of a similar case had tried a rubber pad and was dissatisfied with it.

Dr. DAN MCKENZIE recommended the injection of paraffin into the floor of the mouth, unless the tissues were too tightly bound down by cicatricial tissue.

The PRESIDENT said the case upset one's ideas of the formation of the consonants; and it was worthy of more detailed consideration than could be given at the meeting. It was, to him, quite unexpected for a patient without a tongue to be able to utter the hard *th* as well as he did. His great difficulty seemed to be in those consonants which were stopped at the back of the throat—*k* and *g*.

The PRESIDENT again suggested that the phonetic aspect of the case should be specially studied. He was surprised to find the patient unable to pronounce the letter *j*, which was a labial, and that he substituted for that the lingual-dental *th*. It became a question whether there was any neurotic disturbance. Perhaps Dr. Davis would like one or two other members to combine with him in studying the case.

Dr. H. J. DAVIS, in reply, commented upon the volubility of the patient despite the loss of his tongue.

EPITHELIOMA OF THE LARYNX: MICROSCOPICAL SPECIMEN.

BY DR. E. A. PETERS.

G. T——, aged seventy-four, plumber, complained that he had lost his voice nine months. He considered he had had something the matter with the throat for two years. There was a warty growth involving the right false and true cords. The right cord did not move, and œdema had attacked the corresponding arytenoid. Direct œsophagoscopy showed the posterior surface of the cricoid to be free. The lungs were very emphysematous. Was it advisable to operate on this case?

Mr. EVANS said that it would be wiser not to operate. The patient was very old and there was extensive glandular enlargement.

The PRESIDENT was not in favour of operation.

MODEL OF THE UPPER AND LOWER JAWS AND IMPRESSION OF THE ROOF OF THE MOUTH FROM A YOUNG MAN AGED NINETEEN.

BY MR. A. R. TWEEDIE.

The alveolar arch on the right side had a less pronounced

outward curve than that on the left, and the hard palate on the right side was narrower, and also about $\frac{1}{4}$ in. higher than that on the opposite side. The patient had a deviation of the nasal septum to the left, and the apex of the nose is tilted to the right.

The specimen was shown to elicit an expression of opinion as to whether the asymmetry of the upper jaw and palate had any causal relation to the septal deflection. The post-nasal space was perfectly healthy, and contained no adenoids or other obstruction. The patient had never had any operation on "the nose or throat," and was not a buccal breather.

Mr. H. BARWELL asked what explanation Mr. Tweedie gave of the asymmetry. He himself thought that there was a good deal of asymmetry even in normal cases.

Mr. TWEEDIE, in reply, said there was no history of facial paralysis. The case had been shown to the British Dental Association, and some of the members had suggested that the palatal deformity was due to a flattening of the right alveolar arch in consequence of premature extraction of the temporary teeth. Possibly the consequent raising of the palate on the right side had led to a tilting of the maxillary spine to the left, and so to the septal deviation.

PARTY-WALL PHARYNGEAL CANCER.

BY DR. WILLIAM HILL.

Female, with a malignant tumour involving part of the pharyngeal aspect of the laryngo-pharyngeal party-wall. The parts involved were the posterior surface of the cricoid plate, more especially to the left, the anterior part of the adjacent pyriform fossa, and the pharyngeal surface of the left arytaenoid and left aryepiglottic fold. The œsophagus had been found by endoscopic examination to be free from disease. The case seemed eminently suitable for Glück's type of operation of complete laryngectomy *plus* partial excision of the deep pharynx.

The PRESIDENT said the reason for removing the larynx, in his opinion, was that the pharynx could not safely be removed without it. The safe course was to remove both at the same time, and bring the trachea to the surface.

Mr. EVANS, a year ago, had had a similar but more advanced case in which he had advised against the radical operation, but at the urgent request of the patient he had operated. The larynx, pharynx, and great part of the œsophagus, as far as the upper part of the thorax, had been removed, the patient feeding subsequently through a fistulous opening in the neck. This had been done seven months ago, and so successful had the case proved that he felt some confidence in advising operation in the case now being shown. The operation should be preceded by gastrostomy.

Mr. WESTMACOTT said that gastrostomy should be performed in the early stages and not postponed until the patient was half starved.

Dr. H. J. DAVIS remarked that the larynx did not seem to be so much involved as to require removal.

Mr. WESTMACOTT agreed and advised a lateral operation, leaving the thyroid cartilages intact.

Dr. HILL, in reply, did not favour partial laryngectomy. The growth could not be entirely got at without removing the larynx. As for gastrostomy it was out of date; such patients could always be fed by intubating the oesophagus.

CASE OF EPITHELIOMA OF THE LARYNX IN A MAN, AGED SIXTY-NINE,
FOURTEEN MONTHS AFTER OPERATION.

BY MR. CHICHELE NOURSE.

Previous to operation the patient had been troubled with hoarseness and partial loss of voice for five months. At the time of examination the voice was hoarse, deep-toned, and weak. The whole larynx was inflamed, and there was a sausage-shaped red growth occupying the anterior two thirds of the left vocal cord. Thyrotomy was performed on February 18, 1909. The left vocal cord, the left ventricular band, and the left arytenoid were removed. The thyroid cartilage was completely ossified, and could not be sutured at the close of the operation. It was brought together by suturing the perichondrium. Recovery from the operation was rapid; the patient had remained well ever since, and had gained flesh.

Microscopic examination of a specimen removed before the operation and of a tumour after removal proved that it was an epithelioma. A gland the size of a split-pea removed from the external surface of the crico-thyroid membrane showed no signs of malignant infection.

The PRESIDENT and Mr. ATWOOD THORNE congratulated Mr. Nourse on the result.

TWO CASES OF RADICAL FRONTAL SINUS OPERATION, TO SHOW THE
CONDITIONS NINE AND SIXTEEN MONTHS AFTER OPERATION.

BY DR. STCLAIR THOMSON.

It had been frequently suggested that the only satisfactory way of judging of the results of treatment of sinus suppuration was to show the patient some time after all treatment had been discontinued. The two following cases illustrated the satisfactory results which might be arrived at.

CASE I.—This patient had the radical Killian operation carried

out on the left frontal sinus on November 19, 1908. The case was exhibited before the Section on December 4, 1908 (vide *Proceedings*, vol. ii, p. 51). The patient's left maxillary antrum was also operated on and a suppurating ethmoidal region cleared away. The patient had not been up for inspection for more than a year; during that time she had remained quite free from the headaches (for which she begged to have the operation performed) and never required a nose lotion.

CASE 2.—This gentleman gave a history of eighteen months' nasal suppuration. He had received endo-nasal treatment and had tried the effect of a visit to the Cape. The left frontal sinus contained very foul pus. On August 5, 1909, a radical Killian operation was carried out on the left frontal sinus and an endo-nasal operation on the left maxillary sinus. The patient was out for a walk on the thirteenth day, and returned to the country within three weeks. The depth and height of the sinus could be judged from the skiagram and from the depression on the forehead, yet there was no marked disfigurement, and the patient now enjoyed excellent health and perfect freedom from all his symptoms.

Dr. WATSON WILLIAMS was struck with the excellent result obtained. The sinus was enormous, and after removal of the anterior wall of such a large cavity some depression was inevitable.

The PRESIDENT asked whether Dr. Thomson had considered the question of filling up the depression in any way, as, for instance, by the introduction of paraffin.

Dr. STCLAIRE THOMSON had offered to fill up the depression, but the patient had refused his permission. He was now very free from suppuration, which the exhibitor attributed to his having cleared out the ethmoidal region very thoroughly.

A CASE OF ULCERATION OF THE EPIGLOTTIS, PROBABLY EPITHELIO-MATOUS.

By Mr. H. BARWELL.

The patient, a man, aged sixty-three, had had increasing discomfort for five months, tickling cough, occasional pain shooting to left ear, and slight dysphagia. The epiglottis was red and thickened, and an ulcer was visible on its laryngeal aspect. The infiltration appeared to involve the base of the tongue on the left side.

The PRESIDENT said the disease had extended to the lateral wall of the pharynx, and the pain was as much due to the disease of the pharyngeal wall as to that of the epiglottis. He did not think removal of the epiglottis alone was likely to give a satisfactory result.

CASE OF EXTRINSIC MALIGNANT GROWTH OF LARYNX, ETC.

BY DR. P. WATSON WILLIAMS.

Previously shown at the January meeting of the Section, and reported and illustrated in the "Proceedings," iii, No. 4, pp. 60-62 (JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, February, 1910, p. 84). There had been an increase in the glandular involvement, but there was no ulceration visible and the growth did not extend down the ventricular bands. Most of those who had seen the case diagnosed it as epithelioma; some had suggested endothelioma.

POST-OPERATIVE PERFORATION OF THE HARD PALATE.

BY DR. W. HEMMINGTON PEGLER.

Female, aged thirty-six. The perforation had been produced by a surgeon in operating on the antrum. It communicated with the left antrum and the left nasal fossa. The exhibitor asked whether a plastic operation was advisable.

Mr. H. BARWELL thought a plastic operation unnecessary. The dental plate she wore prevented food getting into the nose.

Mr. EVANS, on the other hand, strongly advised operation.

CASE OF INFILTRATION OF THE RIGHT HALF OF THE LARYNX OF OBSCURE NATURE IN A WOMAN, AGED THIRTY-FOUR.

BY DR. DUNDAS GRANT.

There was an irregular swelling of the right half of the epiglottis and of the right ary-epiglottic fold; it appeared to be firm in texture, and the surface seemed papillated and of a reddish tint. It was of such an extent as to conceal completely the right vocal cord. The rest of the epiglottis was slightly enlarged, and there was in the left glosso-epiglottic space a smooth, rounded, sessile swelling growing apparently from the lingual surface of the base of the epiglottis. The patient complained of hoarseness of three weeks' duration, and had had slight huskiness and cough for six months. There was no physical signs in the chest. Her opsonic index was .7.

Dr. WATSON WILLIAMS suggested that the infiltration might be malignant, and advised the removal of a portion for diagnosis.

The PRESIDENT said it might be lupus, but it did not agree with the picture of any disease of which he knew so far. Possibly the Wassermann reaction would help the diagnosis, and a portion might be removed for microscopical examination. There was no pain. He hoped to give a more detailed account at the next meeting.

CASE OF ODYNPHAGIA IN A TUBERCULOUS SUBJECT WITHOUT
OBVIOUS DISEASE OF THE LARYNX, IN A WOMAN, AGED THIRTY-
FIVE.

BY DR. DUNDAS GRANT.

The patient complained of loss of voice and, during swallowing, severe pain running up to the left ear. In the left hyoid fossa on the outer surface of the ary-epiglottic fold there was an extremely ill-defined sessile area of œdema, but otherwise the larynx was normal in appearance, and the movements of the vocal cords were in no way diminished; there were physical signs of tuberculosis in the chest, but for the moment any tuberculous condition giving rise to the odynphagia must be quite latent. Von Pirquet's cutaneous tuberculin test had been applied, but the result was still being awaited.

VASCULAR TUMOUR OF THE LATERAL PHARYNGEAL WALL IN A YOUNG
MAN.

BY DR. H. J. DAVIS.

Dr. ATWOOD THORNE asked what Dr. Davis proposed to do with the case if it were operated on.

The PRESIDENT thought Dr. Atwood Thorne's "if" was a very important factor. Radium had been used successfully for small vascular growths.

Dr. H. J. DAVIS, in reply, said the tumour was probably a venous angioma. The tonsils had been removed twelve years ago and free bleeding had followed. The patient suffered no inconvenience, save when he lay down at night, and then the tumour filled up and became much larger.

FUNGATING TUMOUR OF EPIGLOTTIS WITH INFILTRATION OF THE LARYNX.

BY DR. H. J. DAVIS.

Tracheotomy had been done. The patient had experienced very severe hæmorrhage from the growth.

GROWTH ON LATERAL PHARYNGEAL WALL.

BY MR. A. EVANS.

The patient, a man, aged forty, had no complaint until a month ago, when he began to suffer from pain on swallowing. The growth

had invaded the tongue, and there were enlarged glands in the neck.

Dr. H. J. DAVIS thought the case one of epithelioma and recommended operation.

Mr. EVANS remarked that operation would entail a very extensive sacrifice of tissue, but he would give the patient the chance and leave the decision to him.

PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

December 10, 1909.

M. MAHU, *President*.

FRONTAL OSTEITIS OF NASAL ORIGIN.

By M. LERMOYEZ.

The patient, during acute rhinitis, exhibited all the signs of a right suppurative fronto-maxillary sinusitis. Operation established the presence of maxillary sinusitis, but demonstrated that there was no frontal sinusitis, for the sinus was absent. The swelling and pain which existed above the right eye were due to frontal osteitis developed around a blind and infected fronto-nasal duct. Trephining at once put an end to all the symptoms. Localised frontal osteites of nasal origin are not common. They may be compared to osteites which develop in diploëtic non-cellular mastoid processes, and which occasionally occur during acute otitis.

M. CASTEX said he always has recourse to drainage by the fronto-nasal duct after operation for frontal sinusitis. In two cases where this drainage was not ensured a spontaneous opening occurred through the supereiliary sutures, showing the utility of post-operative drainage.

ACUTE SEROUS ENCEPHALITIS OF OTITIC ORIGIN.

By M. LERMOYEZ.

The patient was attacked with acute otitis and mastoiditis of the right side, and about a fortnight after the radical mastoid operation presented almost completely the symptoms of cerebral abscess, that is to say, slow cerebration, severe headache, vomiting,

considerable slowing of the pulse, with lowering of the temperature and very rapid wasting. These phenomena lasted a week and then gradually disappeared; improvement went on for a year, ending in complete recovery. It is probable that in this case it was a question of localised serous encephalitis, resulting from toxi-infectious œdema, limited to the temporal convolution adjoining the diseased ear, which underwent resolution without ending in suppuration as usually happens.

PARALYSIS OF THE GLOTTIC ABDUCTORS.

By M. CASTEX.

Man, aged forty-eight, with paralysis of the abductors of fifteen years' duration. The voice was bitonal, and patient had attacks of dyspnoea, especially at night. Examination revealed that the right cord was in the position of adduction and straight, but the left, although in the same position, was flaccid and presented a concavity at its free border. "*Ses deux cordes s'écartent dans l'inspiration et se rapprochent au contraire dans l'expiration.*" One could only ascribe as a probable cause neuritis following typhoid fever, which the patient had at the age of eighteen.

SUPPURATIVE LABYRINTHITIS.

By M. HAUTANT.

Several patients were shown who were attacked with this affection, and on whom he had operated.

RETRO-NASAL CANNULA.

By M. BOSVIEL.

A cannula for washing out the naso-pharynx was exhibited, which is used by the nasal route, thus avoiding the nauseating reflexes which contact with the palate provokes. Usually the patient can introduce it himself without difficulty.

TONSILLAR COMPRESSOR FOR POST-OPERATIVE HÆMORRHAGES.

By M. BOSVIEL.

The curvature of the inner portion of the instrument enables it to adapt itself to the concavity of the mandible; the tongue is

free, no point being compressed except the tonsillar recess. The external part takes its support by an elongated ring on the angle of the jaw. The apparatus is self-retaining.

SARCOMA OF THE NASAL FOSSA.

By M. LUC.

The patient was operated on by him on October 23, 1909, for a sarcoma of the right nasal fossa by Moure's method, with extension of the operative field to the frontal, maxillary, and sphenoidal sinuses. It concerned a man, aged fifty-three. Neoplasm very vascular, implanted on the external wall, projecting through the choana behind, and completely obliterating the nasal cavity. A long incision was made, extending through the whole length of the eyebrow, descending on the side of the nose, turning around the ala nasi, cutting the upper lip to the right of the middle line, and prolonged along the gingivo-labial sulcus to the extent of several centimetres. The growth had not yet invaded, but only infected the frontal and maxillary sinuses, which were found filled with pus and granulations, and were freely opened. The sphenoidal sinus, opened by the same route, was not involved. Resection of the whole of the external wall of the nasal fossa and the entire ethmoidal labyrinth. The very extensive wound united by first intention, and was cicatrised in five days. Histological examination of the neoplasm showed it to be a small round-celled sarcoma, very vascular.

LARYNGOSTOMY FOR CHONDRO-CICATRICIAL STENOSIS OF THE LARYNX.

By M. GUISEZ.

A boy, aged three, on whom he had performed laryngostomy a year ago. It was a question of chondro-cicatricial stenosis of the larynx. After tubage, tracheotomy had to be performed, and a cannula was worn eight years.

The author had succeeded in restoring the lumen of the larynx by rubber dilators. The plastic operation was done a month ago, and the cannula definitely removed.

Respiration was now normal, the voice was a little raucous, but was improving daily.

M. BOULAY added some details to the history of this child, whom he had treated as early as 1901. At the time when he first wore a cannula

obstruction was complete. Boulay did a laryngotomy, which showed a complete cicatricial occlusion of the cricoid region: no enchondroma. He made a new air-way and maintained it with a rubber tube, which slipped out at the end of three weeks. The child regained the raucous voice, which he had at the present time, and wore a speaking cannula several months, but could not dispense with it, for the calibre of the larynx narrowed afresh, once with such rapidity that in one week it fell from 7 to 3 mm. The general health became impaired: the child had to leave Paris for the south and Boulay lost sight of him. It was to be hoped that this new operation would ensure recovery.

M. SIEUR called to mind three patients who had been laryngotomised in his practice. One was completely cured for more than a year, and the two others had a small fistula in the neck: but respiration was carried on as in the first case, through the larynx, and speech was fair.

PAN-SINUSITIS, WITH SPHENO-ETHMOIDAL ÉVIDEMENT.

By M. GUISEZ.

Two patients had been operated on for pan-sinusitis. The maxillary antrum had been dealt with by Caldwell-Luc's method. The frontal sinus was trephined in such a manner as to respect the inner end of the superciliary ridges, so that there was no external deformity. The ethmoidal and sphenoidal sinuses were cleared out by the orbital route. Ethmoidal *évidement* was, in fact, the key to the effectual treatment of pan-sinusitis. Opening up the internal wall of the orbit, combined with resection of the ascending process of the superior maxilla, enabled one to approach the ethmoid directly and to curette it thoroughly.

NASAL MUCCOCELE.

By M. MAHU.

A young patient suffering from this affection.

CHRONIC LARYNGEAL ŒDEMA.

By M. VEILLARD.

He had observed the patient for ten years, with attacks of œdema of the laryngeal vestibule. The swelling at times reached such a degree that tracheotomy had to be considered. In spite of the absence of every sign of Bright's disease, a diet devoid of chlorides each time brought about an improvement in the symptoms. There was a certain degree of hepatic insufficiency.

H. CLAYTON FOX, *trans.*

AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Thirty-first Annual Congress, held at the Harvard Medical School, Boston, Mass.,
May 31, June 1 and 2, 1909.*

(By courtesy of the *Medical Record*.)

(Continued from p. 272.)

Tuesday, June 1—Second Day.

NASAL AND PHARYNGEAL CONDITIONS AS CAUSATIVE FACTORS IN
AURAL DISEASE.

BY DR. GEORGE A. LELAND.

Many ear conditions which eventually threaten life had their origin in the naso-pharynx. The reason for this might be found in the loss of protection normally provided for the safety and integrity of the conducting apparatus of the organ of hearing. A description was given of the arrangements of the Eustachian tube with reference to both anatomy and physiology, and the effect was mentioned of the influence of normal respiration on the movements of the drum membrane. Any interference with these functions would lead to improper ventilation and imperfect drainage of the middle ear. Hence, there would result depressed ear drum, adhesive catarrhal effusions, inflammations, loss of hearing, and in less asthenic conditions the otitis media catarrhalis chronica of middle and later life, always amenable to treatment, but curable only in its earlier stages. In normal nasal respiration there was a rhythmic movement of air through the Eustachian tube, and freedom of ventilation through these channels was an essential of the integral ear. Ear-aches ought to be attended to, even though slight. Adenoids should be removed as soon as discovered. The fossa of Rosenmüller must be cleaned out. The effect of influenza, scarlet fever, and other poisons on the ear were well known. Under the author's direction 127 cases were examined in the scarlet fever wards of the Boston City Hospital with reference to the effect of the disease in causing enlargement of the naso-pharyngeal lymphoid tissue. Forty-three were found without adenoids; of the eighty-four having them, seventy-two were without aural complications either past or present; of the twelve with aural complications, acute or chronic, all had adenoids, and of these five had them generally distributed, while in seven they were confined to the fossæ of

Rosenmüller. The author said that children with earaches always had adenoids. Earache, it was true, might come from many areas outside of the naso-pharynx, such as teeth, diseased tonsils, pharyngitis lateralis, etc., all reflexly. An enlarged middle turbinal might cause a feeling of fulness in the ear. There might be a low-toned tinnitus due to occlusion of the fossa of Rosenmüller, and finally, vertigo might be due to an occluded nose.

CHRONIC EPIPHARYNGEAL PERIADENITIS IN ADULTS.

BY DR. JAMES E. LOGAN.

A condition found in many cases, some six of which were described in detail. It was an inflammation of the tissue in the neighbourhood of the pharyngeal bursa which might occasion symptoms analogous to those of sphenoidal sinus inflammation. The inflammation seemed to involve not only the lymphoid tissue, but also the muscles, vessels, and connective tissue. Detailed microscopical findings in such cases were given by the author. The effect of such inflammations on the organs of hearing would be evident. If repeated attacks occurred, they left the patients especially liable to attacks of acute rhinitis and epidemic influenza. While this lymphoid tissue atrophied as age advanced, a very little of it might be sufficient to cause trouble. Diagnosis of the condition was easy. Prognosis was usually favourably, so far as the vault was concerned. The symptoms were those of repeated attacks of influenza, sensations of fulness in the vault of the pharynx, desire to hawk and expectorate, etc. Treatment was total extirpation of the diseased tissue. The author's method of operating was described in full. He said that digital examination ought always to supplement that made by the mirror. In order to avoid hæmorrhage he advised the preliminary stripping of the mass from its attachments to break up the continuity of the blood-vessels, and its removal with instruments two days later. The greatest abundance of the mass would generally be found in Rosenmüller's fossa.

THE IMPORTANCE OF THE THOROUGH EXAMINATION OF THE NASOPHARYNX IN THE TREATMENT OF EAR DISEASES.

BY DR. FRANCIS R. PACKARD (Philadelphia).

His conclusions were as follows: (1) In every case of middle-ear disease which presented itself for treatment one of the most important measures to be employed was to make a thorough examina-

tion of the naso-pharynx. (2) This examination should be made not only with the mirror, but also with the finger, not only before, but also after cleansing the naso-pharynx. Thick mucus or other discharges might obscure the tissue changes. In children the naso-pharynx should be cocainised through the nares previous to the digital examination. The same thing might be done with adults who would not tolerate the mirror. The disagreeable features of the procedure were no justification for its omission. (3) Although the presence of obvious growths, such as tumours or the existence of inflammatory condition in the naso-pharynx, had had the importance of their presence as a source of aural disease recognised for many years, the existence of adhesions in the naso-pharynx as a cause of pathological conditions within the ear had been largely overlooked, chiefly because of the difficulty attendant upon the examination of the naso-pharynx, which would lead to the discovery of their presence.

Dr. D. BRADEN KYLE (Philadelphia) referred to the various plans according to which this might be done, as mechanical, anatomical, pathological, etc. An anatomical cause might be a narrow naris or anatomical malformation. All of the specific lesions, as tubercle, syphilis, etc., might be included in any class except that they were never physiological. The ear lesions were more common at puberty, and again at the menopause. He had seen the familiar soap-bubble blowing of children cause ear trouble. In every case the first point for the practitioner to decide was this: Could this nasal causal factor be removed, and if so, had this nasal causal factor already produced permanent pathological lesions in the ear, or would the removal of the nasal obstruction remedy the ear lesion?

Dr. E. A. CROCKETT (Boston) said that operations done on the nose for the relief of hearing were often done unadvisably and with promises to the patient as to results which could not possibly be made good.

Dr. O. T. FREER had known hearing to return after septal operations and considered them justifiable in selected cases.

Dr. W. L. BALLENGER said that it was not alone the obstruction in the nose, but also and principally the associated inflammatory conditions, which gave the trouble to the hearing. The three main conditions to look out for were ethmoiditis and sphenoiditis, enlargement of the posterior ends of the middle turbinates, and adenoids.

Dr. F. P. EMERSON (Boston) called attention not alone to the adhesions around the lips of the Rosenmüller fosse, but also to the amount of degenerated tissue in their depths. In such instances we might have unilateral deafness with low-pitched tinnitus. The physiological respiration of the palatine muscles produced a marked change, and undoubtedly the catheter had been much abused.

Dr. PERCY FREIDENBERG (New York) said that the new pharyngoscope could be borne by patients for ten minutes. It enabled us to study those various changes which take place in deglutition, gagging, coughing, etc., about the orifices of the Eustachian tubes. In this way we had learned that even in the presence of adenoids there might be a practically normal contraction of the soft palate and muscles around the tubes.

Dr. G. E. SHAMBAUGH (Chicago) said that doubtless all would agree that many forms of ear disease, such as mucus accumulation, suppuration, etc., were improved by operation on the naso-pharynx. But the cases which had been neglected and came to us in middle life with drum membrane covered with scar tissue, bound down, etc., did not benefit by operation. We must distinguish between middle-ear disease and ankylosis of the stapes. Obviously, if the labyrinth was involved, treatment of the middle ear would not benefit the hearing.

Dr. J. F. BARNHILL (Indianapolis) said that the breaking up of adhesions would not always relieve the difficulty. The tube might be pervious, although hearing was still defective. The breaking up of adhesions did good by exciting a certain amount of hæmorrhage, and sometimes would relieve tinnitus. Moreover, there was a certain psychical element entering into the case. The continued attacks of naso-pharyngitis were distinctly disastrous.

Dr. J. PAYSON CLARK (Boston) said he could not accept the doctrine that every case presenting adenoid tissue in the naso-pharynx called for surgical operation.

Dr. B. ALEX RANDALL (Philadelphia) emphasised the importance of massage. Adenoid operations would fail of benefit if there was a stuffed nose in front. He had never seen any brilliant results from clearing out the Rosenmüller fossæ. Shrunk adenoid masses, although no longer obstructive, might often be removed with benefit. He had seen improvement in otosclerosis by treatment of the middle ear.

The following papers were read by title: "Sloughing Fibroma of the Naso-pharynx," by Dr. H. L. SWAIN, of New Haven: "Report of Cases illustrating our Progress in the Surgical Treatment of Chronic Stenosis of the Larynx and Trachea," by Dr. JOHN R. WINSLOW, of Baltimore.

INTERNATIONAL CONGRESS OF MEDICINE AT BUDAPEST.

September, 1909.

SECTION OF OTOTOLOGY (AND INTERNATIONAL CONGRESS OF OTOTOLOGY).

The following papers were read:

THE AFTER-TREATMENT OF THE RADICAL MASTOID OPERATION WITHOUT PACKING.

By DR. NEUBAUER (Budapest).

Petit had, as early as the eighteenth century, opened the mastoid process on account of disease. Schwartze was the first to lay down definite indications for the performance of this operation.

After this the efforts of specialists were directed to ensure the success of the operation; first, by modifying the operation itself, and, secondly, by altering the method of after-treatment. Besides Schwartz himself, Küster, Zaufal, Stacke, and others suggested modifications of the operation. In order to hasten the period of healing, Stacke advised the covering of part of the bony cavity with a skin-flap. This plastic of Stacke's was modified by Panse, Körner, and others. Sprague advised the blood-clot method of shortening the after-treatment; Mosetig the iodoform plug. Zarnko recommended the omission of packing after the first dressing, and filled the cavity with boric powder. Posthumus Meyjes failed to get healing in a single case by this method of treatment, while Mühler, Laurens, Gerber, and Stein reported cases in which the period of after-treatment had been considerably shortened by adopting this method. At the Seventh International Congress of Otology, Lermoyez, Pafit, Dupont, Lubet, Barbon, and others recommended it.

At the meeting of physicians at Pozsony, the speaker reported on eighteen cases which had been treated in the Adele Brody Children's Hospital, and in which he had successfully carried out the after-treatment without packing. As a rule the packing was discarded after the seventh day. The after-treatment lasted in these cases from forty-two to sixty-five days. In 1908 he treated twenty cases without packing, and in 1909 twenty-two cases. He used the method not only after the radical operation but also after Schwartz's operation; but, in the latter, the packing was retained till the end of the second or third week. The experience of his sixty cases has made him an advocate of this method, as the after-treatment is rendered easier and more pleasant. This was especially the case when dealing with children. He therefore recommended the after-treatment without packing, not only after the radical operation, but also, with the above-mentioned limitation, after the simple opening of the antrum.

Dr. SCHWARTZE said that in his clinic treatment without packing had not come up to expectation. Isemer had published an account of the drawbacks they had experienced. He therefore uttered a warning against making any change.

Dr. FREY said that in the Vienna clinic the withholding of the plugging was found to be a failure. They had never packed firmly; but all his colleagues met with unpleasant results unless they did pack. It was simply incorrect to say that on giving up plugging, previously hypertrophied granulations involuted and the cavity enlarged once more. They had often seen marked meatal stenosis in cases which had not been packed, and behind the stenosis granulations and suppuration could

continue unchecked, so that the whole aim and object of the operation might be lost. Towards the end of the treatment packing might be given up, but to dispense with it from the commencement he held to be a mistake.

Dr. DUNDAS GRANT warned against firm tamponning, except for the first or perhaps the second introduction. Firm plugging was likely to produce narrowing instead of preventing it. He employed Thiersch's grafts (Ballance's method) in some cases with the best results; in cases of extreme narrowing or atresia he re-opened the wound-cavity and grafted. In cases of cholesteatoma with well-developed lining membrane he advised the retention of the lining membrane and the instillation of alcohol.

Dr. NEUBAUER had seen evil results follow cases which had been firmly packed. He packed for from one to three weeks in order to prevent meatal stenosis.

PREVENTION OF THOSE CATARRHAL STATES THAT LEAD TO DEAFNESS, WITH SPECIAL REFERENCE TO AUTO-INTOXICATION.

By DR. SARGENT F. SNOW (Syracuse, N.Y.).

While the chronically deaf are in the majority of instances amenable to treatment, experience is proving that a most careful and strenuous study of preventive measures against causes is the best effort of the twentieth century otologist.

For operable cases of deafness we have the advantages of modern surgery, but to retain and make permanent the results secured by such local surgical work we must correct systemic faults.

In the author's opinion, auto-intoxication is so often the chief underlying cause of deafness, in the advanced and extreme cases, that the term "auto-toxic deafness" is more appropriate for general use than the old term "catarrhal deafness."

Anticipating an auto-toxic crisis by administering a glandular stimulant like calomel protects not only from recurring colds, but it stimulates and enables the system to manufacture its own anti-toxins against bacterial activity.

VENOUS CONGESTION.

By DR. BIEHL (Vienna).

The author points out that very few reports on the use of Bier congestion in cases of ear diseases are favourable. The keenest advocates of the method should surely find in many of the reports grave warning, where, for instance, a sudden catastrophe has occurred though the patient remained perfectly comfortable

through wearing the bandage. At best a combination of congestion and suction may be recommended, but the treatment can in no case be left in the hands of the patient. The explanation of the want of success of treatment by congestion in ear disease lies in the unyielding walls of the mastoid cells and middle-ear cavities.

CONTRIBUTIONS TO THE HISTOLOGY OF LABYRINTH AFFECTIONS IN
LEUKÆMIA.

BY DR. GEZA KREPUSKA (Budapest).

The author reported two cases observed by himself, and demonstrated enlarged photo-micrographs of serial sections of the labyrinth. The first case took an acute course, showing symptoms of Ménière's disease. The histological changes consisted of leucocytic infiltration between the fibres of the auditory nerve, and also to a moderate degree along the connective tissue of the nerve. The middle ear was intact. In the second case, which was chronic, the mucous membrane of the tympanum was markedly thickened from infiltration of mononuclear and polymorphonuclear leucocytes. Drum membrane intact. In the membranous labyrinth there was only slight infiltration. The most marked infiltration was found at the spot where the auditory nerve enters the bone. The conclusions drawn were, that in leukæmic infections of the ear, the membranous labyrinth, the endostium, and especially the auditory nerve are the parts most affected. The infiltration appears to follow the lymphatics. Previous infections of the tympanum do not predispose to this disease, which is rarely observed in Hungary.

THE TREATMENT OF OTITIS MEDIA NON-SUPPURATIVA CHRONICA.

BY DR. E. CRESSWELL BAUER.

The subject was introduced for discussion on account of the frequency of these cases and the often unsatisfactory results of treatment. It was considered under three heads: treatment of the ear, treatment of the nose and naso-pharynx, and general treatment.

With regard to local treatment, the author relies chiefly on a thorough ventilation of the Eustachian tube by the catheter, with or without bougies, combined in certain cases with paracentesis of the tympanic membrane. Also the use of nascent fumes of chloride

of ammonium applied for certain periods, and the application of electro-massage to the membrane.

The treatment and prevention of catarrh was alluded to, and the question of operating on nasal obstruction for the sake of the ears and of operations in the tympanic cavity was considered.

The use of drugs in these cases was also referred to.

Dr. RANDALL (Philadelphia) advocated a persistent use of the catheter and of massage. He had found tinnitus benefited by the use of thiosinamine in the form of a combination with bismuth biniodide. Stenosis of the Eustachian tube was relieved by diamin in 1 per cent. to 5 per cent. solution blown through a catheter into the tube.

Dr. DUNDAS GRANT recommended collodion in relaxation of the membrane. He distinguished between continued catarrh and changes resulting from a past catarrh or inflammation. In the former, treatment was mainly constitutional; in the latter, mainly local.

RESULTS OF THE COMPARATIVE BACTERIOLOGICAL EXAMINATION OF THE BLOOD IN INFLAMMATIONS OF THE MASTOID PROCESS.

BY DR. LEUTERT (Giessen).

Leutert reports on sixty-four new cases of blood examination in mastoiditis and sinus thrombosis. In twenty cases of uncomplicated mastoiditis the blood from the sinus and a vein in the arm was examined in thirteen, and the sinus blood alone in seven. All the cultures remained sterile with the exception of four. In two of these, which were acute cases, a colony of streptococci developed, and in two chronic cases a few staphylococci developed in one and a few rods in the other. As the surface of the sinus was already affected in these four cases, the organisms must have entered the cannula when it pierced the sinus wall.

In fifteen cases where there was a high temperature, which fell one to three days after exposure of the sinus—sinus phlebitis without thrombosis—the cultures from the sinus blood and from the arm vein remained sterile in the quite recent acute case. In the others a few streptococci were found in the sinus blood, while the blood from the arm vein remained sterile. In six other cases, where, from the course of the disease, a small thrombus must have already formed, sinus and arm blood were sterile in two, once the arm blood was alone sterile, and in two cases streptococci and in one case staphylococci developed in both. With the exception of two plates the number of micro-organisms remained below one hundred.

The remaining twenty-six cases were instances of sinus throm-

bosis. Except for a few mild cases the sinus blood showed a marked positive reaction, over 1000 streptococci being present. The blood obtained from the arm, however, remained sterile in half the cases in which it was examined; in the remainder the number of organisms was small. Cultures from blood removed from the jugular vein also showed but a few organisms.

From these observations Lentert draws the following conclusions:

In mastoiditis not complicated with sinus thrombosis, where the temperature remains low, bacteria do not get into the blood-stream. A rise of temperature corresponds with an entrance of bacteria into the circulation through the sinus wall, at first without thrombosis, which, however, soon takes place if the diseased bone, from which the inflammation spreads to the sinus wall, is not removed.

The first organisms to enter the circulation cannot be demonstrated by cultures, as they are rapidly killed by the bactericidal properties of the blood. It is only after a certain, though frequently short, time has elapsed that cultures will grow. As the severity of the disease increases bacteria also appear in the peripheral circulation, but always in small numbers, even although they are very numerous in the sinus blood. In sinus thrombosis the organisms found were almost invariably streptococci. The explanation of the presence of staphylococci, especially in the peripheral circulation, is uncertain, and is not considered in the following diagnostic conclusions. Streptococci do not multiply in the blood or in the blood-forming organs in otitic pyæmia. The following practical conclusions were drawn:

(1) The appearance of abundant streptococci in the sinus blood confirms the diagnosis of sinus thrombosis even when in exceptional cases the temperature does not rise above 102° F. (39° C.)

(2) A marked preponderance of streptococci in the sinus blood as compared with the number in the peripheral circulation decides in doubtful cases whether the pyrexia is to be attributed to the ear condition or to another cause, the differential diagnosis being in favour of sinus thrombosis.

(3) If there are only a few streptococci in the sinus blood, but also some in the peripheral circulation, and any other disease causing a high temperature can be excluded, this also supports a diagnosis of sinus thrombosis which has been suspected from the presence of pyrexia.

(4) The absence of organisms in the sinus blood and in the peripheral circulation does not exclude the possibility of sinus

thrombosis, as a negative result may be obtained in thrombosis limited to the bulb. In such cases the temperature alone decides. However, it is permissible in very early cases to wait one or two days for the appearance of some other disease when in doubt whether the fever is due to the ear condition; the puncture of the sinus can then be repeated at a lower point. In later cases, where the organisms have greatly diminished owing to the gradual breaking down of the thrombus, the clinical picture may be obscured by the presence of metastases.

(5) If there is a possibility of both sinuses being affected, thrombosis must be suspected in that sinus in which alone streptococci are present, or in which they are in great numerical preponderance.

(6) If the number of streptococci present in the two sinuses does not differ greatly but is much less in a peripheral vein on one side, bilateral sinus thrombosis must be suspected.

(7) The presence of a metastasis suggests that sinus thrombosis has been present for a considerable time.

ON THE DIAGNOSTIC DIFFICULTIES OF LATENT CEREBRAL ABSCESSES OF OTITIC ORIGIN.

BY PROF. GHERRARDO FERRERI (Rome).

There is no experienced otologist who does not record, to his great sorrow, some case in which he has found only on the *post-mortem* table a subcortical abscess not diagnosed through the absence of some symptom which might have guided him. Many subcortical encephalic abscesses of otitic origin, even when of large dimensions, remain unobserved because the white substance may be disorganised without exerting tension and pressure on the surrounding parts, and for that reason without causing any symptoms.

Dividing the symptoms into three categories there are—(a) general symptoms depending on the suppuration; (b) symptoms of augmented endo-cranial pressure; (c) focal symptoms, extraordinarily difficult, of which some cannot be absent in *acute* otitic encephalic abscesses. On the other hand in the chronic ones of old date the dictum *oportet omnia signa contemplari* is very often of no use, because, indeed, symptoms might be altogether absent. Certainly the semeiology of the brain is still incomplete, although we are no longer in the times when Fantoni said concerning it—“structure obscure, diseases more obscure, functions most obscure.”

From the present state of matters, however, it is to be hoped that the constantly increasing perfection of knowledge of the psychical functions may lead to discoveries regarding the changes taking place in suppurative processes as has been done in the case of tumours of the frontal lobes.

If one were to collect all the cases of otic-encephalic complications observed in our clinic since its foundation, one could demonstrate that, notwithstanding the continued progress made by otologists and neuropathologists, the number of cases of abscess that could not be diagnosed owing to the uncertain symptoms, though it may be diminished, has not disappeared. Confining myself to the cases observed by me during the seven years I have directed the clinic, having made every effort to complete the diagnosis, I must confess that in some patients the diagnosis was only possible on the operating table and sometimes only *post-mortem*.

Making a brief critical examination of the histories of my cases—in Cases 1, 2, 3, 4, 5 the diagnosis was not given, except for No. 3, in which the cerebellar symptoms were distinct, but in this case the localisation was on the side opposite to the affected ear, and it was not a question of abscess but of solitary tubercle. In No. 5, notwithstanding the doubts awakened in us by the persistent cephalalgia, these were always overcome by the results of the repeated neurological examinations, and we were caught unawares by the rupture of the abscess into the lateral ventricle, the operation for which did not save the patient. In No. 1 the cephalalgia, which might have caused a suspicion of encephalic abscess to arise, disappeared almost entirely after the operation on the ear, confirming in our minds the opinion that it was only a symptom of retention. In No. 2 the acute character of the auricular inflammation and the almost complete want of any other symptoms made us perhaps not take sufficiently into consideration the disturbances of speech. On the other hand, we may plead the illiteracy of the patient and the fact that country labourers exhausted by malaria and the nature of their work very often cannot drag out a word even when the speech-centres are immune. The history in No. 4 concerns a patient with diffuse tubercular caries of the temporal bone gone on to cause repeated carotid hæmorrhage. This lesion evidently masked the nervous picture, but that which causes so much surprise is that so vast a collection of blood should not have caused disturbances of speech until the last moment. *A propos* of this case, we must lay stress on the relative importance to be

assigned to the examination of the ocular fundus, in which, while sometimes changes were found in diseases of the acoustic organ which did not trespass beyond the middle ear, nothing was found in several cases of encephalic abscess (Nos. 1, 4, 5). The last two were the only ones in which the symptomatology clearly guided us to the diagnosis and localisation of the disease. In the first there were signs of compression and disturbances of speech, and in the second disturbance of speech and the cerebral fistula opening externally.

In conclusion, it only remains to be stated that, indeed, the best diagnoses are made only by exploratory operation.

SHOULD THE JUGULAR BE LIGATURED OR NOT IN PHLEBITIS OF THE LATERAL SINUS?

By DR. R. BOTEY (Barcelona).

Otologists may be ranged in two camps, ligaturists and anti-ligaturists. The author is an anti-ligaturist, being convinced by his experience that ligature of the jugular in thrombo-phlebitis of the sinus is quite useless.

In support of this opinion, he cites eight cases of patients operated upon by him, in which there was a mortality of 50 per cent. The cases which recovered were those in which the jugular was not tied. Of the four fatal cases the jugular was tied in two, and resected in the two others.

If the vein is actually affected, Botey, however, approves of the application of a ligature, though, in such a condition, which indicates an extended infection, the patient is often beyond the reach of surgical aid.

Moreover, otitic pyæmia may be either severe or benign. Some cases have a natural tendency to limitation; there are some in which the sinus becomes obliterated or narrowed, but cases are also met with of a very purulent character, which are propagated rapidly towards the interior of the cranium as well as towards the jugular and the general circulation.

According to Botey, the pulsations which are noticed over the lateral sinus are not an indication of thrombosis, but are merely the pulsations of the cerebral mass, transmitted to the dura mater, and thence to the sinus.

THE INFANTILE TYPES OF THE TEMPORAL BONE AND THEIR SURGICAL IMPORTANCE.

BY MR. ARTHUR CHEATLE.

By infantile type is meant the persistence in an exaggerated degree throughout life of the anatomical conditions of the outer wall of the antrum and mastoid mass as seen in infancy. In the adult the mastoid mass is generally *diploëtic*, but very rarely *dense*; the outer wall of the antrum is always dense and thick, and lined internally by the cells which form before birth—"fœtal cells"—and a layer of dense bone separates the cavity of the antrum from the mastoid mass.

The types are found in about 20 per cent. of normal bones.

The lateral sinus is usually forward. The effects on suppuration in the antrum and on operations for suppuration are considered. The types are conducive to chronic suppuration. The density of the outer antral wall so frequently found in chronic suppuration in the antrum is a factor in producing chronic suppuration, and is not an osteo-sclerosis.

The paper was illustrated by lantern-slides and numerous specimens.

Prof. POLITZER said that the diploëtic type of mastoid had never before been so thoroughly investigated. To Mr. Cheatle was due the credit of having determined the anatomical relationship of the mastoid antrum in the diploëtic type. The speaker remarked that in his text-book he had drawn attention to the forward-lying lateral sinus in these types. He drew attention further to the practical point that in acute otitis the diploëtic mastoid is seldom attacked, and that in those cases in which small abscesses formed in this situation the infection was transmitted from the middle ear either through blood- or lymph-vessels. Such cases, which were generally termed "osteomyelitis," were frequently followed by pyæmia and metastatic abscesses because the pus, which generally contained streptococci, entered directly into the blood-stream from the diploëtic spaces. He had found that injections of Berlin blue into diploëtic mastoids passed very easily into the sinus and into the general venous channels of the petrous bone.

Dr. UCHERMAN (Christiania) thought it would be difficult for Dr. Cheatle to prove that the type in which he had found eburnated bone belonged to a special type of normal development. Unfortunately, it was impossible to conclude that this was the case from the case history alone, since, especially in children, purulent otitis media not infrequently occurred without perforation of the membrane and discharge of the pus into the meatus. This had been found in many *post-mortems*, particularly of children with broncho-pneumonia (A. Hartmann). Thus in the history of such cases there was no record of discharge or inflammation of the ear.

Dr. FREY said that the cells called "fœtal" by Mr. Cheatle were the

same as those found on the outer side of the antrum—*cellulæ squamosæ*, which were consequent upon the mastoid process being constructed of two elements, and, as had been shown by Symington and himself, they were sometimes met with in adults.

THE DIAGNOSIS AND TREATMENT OF INTRA- AND EXTRA-DURAL
ABSCESSSES OF OTITIC ORIGIN.

BY DR. COMPAIRED (Madrid).

No one as yet knew a clear, precise, undeniable, and pathognomonic symptomatology of intra-cerebral abscess, nor even of those which are intra-meningeal and extra-dural, so that these affections could be diagnosed without any sort of doubt.

The clinical history as well as the auxiliary sciences failed to give information sufficiently categorical and certain to establish the diagnosis in the way that such serious conditions demanded. Surgical measures afforded the only treatment likely to be efficacious in its results, though even these did not always lead to a favourable ending, either from being employed too late, or from the impossibility of carrying them out with the necessary thoroughness, or else because of complications which supervened either during the operation or afterwards.

THE PATHOLOGICAL CHANGES IN THE ORGAN OF HEARING IN
DEAF-MUTISM.

BY DR. ALFRED DENKER (Erlangen).

Our knowledge of the pathological anatomy of deaf-mutism has been immensely increased by the sections of Steinbrügge, Habermann, and Siebenmann, and by the technique of preparing the temporal bone, which permits of a relatively quick decalcification of the bone along with rapid fixation of the delicate structure of the membranous labyrinth. It is now possible, in those cases where macroscopic examination of the temporal bone reveals nothing, to detect minute changes in the cochlea and nervus cochlearis. The author then describes the pathological changes in the deaf-mute ear, based on the monograph published in 1904 by Siebenmann, whose research has laid a sure foundation for the pathogenesis and anatomy of deaf-mutism, based also on the work published during the four years following. He still holds, contrary to the opinion of Bireher, Hammerschlag, and Goerke, to the almost generally accepted division into acquired and congenital deaf-mutism. In acquired deaf-mutism he distinguishes between (1) cases of

meningitic origin, (2) cases of middle-ear origin, (3) cases in which the deaf-mutism is due to primary changes in the labyrinth.

In congenital deaf-mutism the author, like Siebenmann, distinguishes between two chief groups. The first includes those cases of aplasia of the whole labyrinth; the second group those cases in which the whole bony and membranous labyrinth is present, but the epithelium of single areas of the endo-lymphatic space is degenerated to a greater or less degree. The second group may further be divided into (*a*) cases where the metaplasia of the epithelium is restricted to the basilar membrane; (*b*) cases where the metaplasia is widespread, where there is absence or incomplete development of the sensory epithelium combined with ectasia and collapse of the membranous labyrinth of the pars inferior.

There were relatively only a few transitional cases between the single types of the group *b*, or cases which did not exactly correspond to one type. Whether this division into single types will hold in the future, with an ever-increasing material, cannot as yet be ascertained.

(To be continued.)

Abstracts.

NOSE.

Greene, D. Crosby, jun. (Boston).—*The Transplantation of Cartilage in the Correction of Deformities of the Nose.* "Boston Med. and Surg. Journ.," March 17, 1910.

The author gives a *resumé* of literature as to transplantation of cartilage and perichondrium. He reports two cases of deformity resulting from undrained abscess of septum with destruction of the quadrangular cartilage. In both cases cartilage from the submucous resection operation on other persons was used. *Macleod Yearsley.*

Citelli S. (Catania).—*On Two Cases of Chronic Suppurative Disease of the Frontal Sinus Treated by My Method.* "Zeitschr. f. Laryngol.," vol. ii, Part IV.

The method of the writer, which is founded on experiments on dogs, consists essentially in the removal of all diseased material from the sinus, the disinfection of its walls, and the filling of its cavity with Mosetig's No. 2 mixture of iodoform and paraffin.

Of the two cases here reported the first was that of a man with a very large frontal sinus. Healing at first occurred, but four months after the operation, during a very severe attack of acute catarrhal rhinitis, re-infection of the sinus took place and Killian's radical operation had eventually to be performed.

In the second case, that of a man with a relatively small sinus, the nasal opening of which had become completely obliterated, the writer's method was completely and permanently successful and the cosmetic result excellent.

The operation is performed in two stages. The first includes a sufficiently wide opening of the frontal sinus to allow access to the entire cavity, removal of diseased ethmoid cells, and curetting and disinfection of the walls of the cavity and of the fronto-nasal duct. The cavity is then packed with gauze, which is removed daily to allow of disinfection and the application, if necessary, of the cautery, particularly about the orifice of the fronto-nasal duct, in order to obtain closure of the latter. After a period of from fourteen days to four weeks, when the sinus has been completely shut off from the nose by fibrous tissue, the second stage of the operation is undertaken. This consists of careful disinfection of the walls of the cavity, the use of hot air in order to dry them, and the introduction of the iodoform and paraffin.

The method is best adapted for sinuses of moderate size. The advantages claimed are the rapidity of the healing, the impossibility of re-infection from the nose, provided that obliteration of the fronto-nasal duct has been obtained, and the excellent cosmetic result.

Thomas Guthrie.

Hajek, M. (Vienna).—*The Treatment of Empyemata of the Accessory Sinuses.* "Zeit. für Laryngol.," vol. ii, Part V.

In reference to the treatment of chronic suppurative disease of the maxillary antrum, the author gives it as his opinion that the first measure in cases of dental origin (which are much more frequent than was formerly supposed) should always be removal of the tooth and lavage through an opening in the alveolus after Cowper's method. Even in chronic cases healing not infrequently follows this procedure. In a very considerable number of cases healing follows the modified Micklewitz operation (resection of a portion of the inferior turbinal and the making of a large opening from the inferior meatus). It is essential for success that the opening should be very large, as the tendency to close is great. In obstinate cases in which conservative methods have failed the Luc-Caldwell operation will alone succeed. The results of the latter, especially since the introduction of Denker's modification, are very good, but failure may result from incomplete removal of the disease, or from the nasal communication not being made sufficiently wide. Apart from faulty technique the operation may be unsuccessful owing to re-infection of the cavity from other diseased sinuses, or because the dental origin of the trouble has been overlooked. In patients with ozena the radical operation gives very disappointing results; in such cases, therefore, lavage after one of the conservative methods should be employed.

In reference to the treatment of frontal sinus suppuration, the writer lays stress on the serious and delicate nature of the radical operation, and refers to two of his own cases in which it was followed by death from meningitis. In neither of these cases did the operation present special technical difficulties, nor was the disease of an unusually grave type. He gives the indications for the operation as follows: (1) In all cases in which orbital or cerebral complications have already occurred or are imminent, and in cases in which bone disease is present. (2) In chronic uncomplicated cases only when, in spite of persistent endonasal treatment, serious trouble, such as profuse discharge or intense pain, continue. In the great majority of chronic cases in which endonasal treatment has

produced an improvement without complete healing, the radical operation is at the present time not indicated.

Thomas Guthrie.

Onodi, Prof. A.—*The Oculo-Orbital, Intra-cranial and Cerebral Complications of Diseases of the Nasal Accessory Sinuses.* "The Laryngoscope," November, 1909, p. 801.

A general *resumé* of the author's work upon the sinuses, containing several items of novelty and interest, of which the following may be mentioned.

It must not be supposed that the left frontal sinus is generally the larger and so the more liable to disease; radiography has shown that the frontal sinuses are of equal size in one third of the skulls examined, while in one third the right and in one third the left is the larger.

Considerable emphasis is laid upon the extension by contiguity of inflammations from the sinuses to the meninges, etc., and, in the same connection, the close anastomotic intercommunication between the veins of the nasal, sinusal, orbital and cranial regions is insisted upon.

It should not be forgotten that contra-lateral orbital and intra-cranial complications due to asymmetrical extension of the sinuses is by no means unknown. This applies to the sphenoidal no less than to the frontal sinus, since temporo-sphenoidal abscess on the side opposite to a diseased sphenoidal sinus has been reported.

We are generally accustomed to think of extension of infection from one sinus to another as travelling along continuous mucous surfaces. Onodi, however, points out that disease is frequently transmitted from one sinus to another, as well as from a sinus to an adjoining cavity (orbital or cranial), directly through the bony "party-wall" common to the cavities, and, as might be expected, the facility of such extension depends upon the degree of thickness of these bony walls.

Turning to circulatory factors, the author recapitulates his description of the "semicanalis ethmoidalis," a venous trunk, which, passing from the anterior ethmoidal foramen to the anterior cranial fossa along the orbital aspect of the wall of the frontal sinus or ethmoidal cells, receives veins from these cavities, and so forms a connecting link between these accessory sinuses, the orbital cavity, and the dura mater. As a consequence of this anatomical arrangement thrombo-phlebitis of the ethmoidal veins may extend directly to the veins of the orbit or dura. He further reminds us of the relationship between the meningeal spaces and the lymph channels of the olfactory mucosa.

After a discussion of the different orbital and ocular sequelae of sinusitis the author concludes with a series of cautions, of which the following are the most striking: He is opposed to any stereotyped view associating disease of the sphenoidal sinus with affections of the optic nerves; in many cases the sphenoidal sinus itself has no relationship whatever with the optic foramen, its place being taken by the posterior ethmoidal cells. When, therefore, both ethmoidal and sphenoidal cells are found to be diseased then both of them must be treated and not the sphenoidal only. Again, he warns us against concluding too hastily that disturbances of vision are due to sinus disease, for both conditions may co-exist in the one case and yet be quite independent of each other. Retro-bulbar neuritis may get well spontaneously without any therapeutic measures whatever. Finally, the remarkable fact is commented upon that extensive nasal disease may cause no ocular disturbance, while on the other hand slight nasal disease may induce severe disturbances of vision.

Dan McKenzie.

LARYNX AND TRACHEA.

Myerson, A.—*A Case of Falsetto Voice and its Relation to Spastic Aphonia.* "Boston Med. and Surg. Journ.," February 10, 1910.

The patient was a boy, aged fourteen. About the onset of puberty he caught a severe "cold," involving nose, throat, larynx and chest, after which he lost the power of voiced speech. There were no signs of a peripheral neuritis, and the condition was considered as hysterical. Two months' treatment by electricity gave no result. Ten months later it was noted that his voice was not a pure whisper, but tinged with a thin, high-pitched squeak. He showed general lack of muscular tone, but on attempting to speak this was replaced by a general spastic condition of the vocal and respiratory organs. No abnormality of action of the vocal cords. Case diagnosed as one of falsetto voice in the male. Proper breathing exercises cured him rapidly, and he now has a good and constant baritone. A good discussion on the functional disorders of speech follows.

Macleod Yearsley.

Wishart, D. J. G. (Toronto).—*A Case of Laryngeal Paralysis.* "Canadian Journ. of Med. and Surg.," July, 1909.

This was the case of a female child, aged eight, in which intubation had to be done for the relief of laryngeal diphtheria, the child being in the isolation hospital. From November 17 to January 27 intubation had to be done three times, the tube being allowed to remain in position each time for four or five days and then removed. The patient was at last discharged. Dyspnoea returning, the child was next placed in the Sick Children's Hospital. She remained an inmate for 254 days before she was well enough to be discharged. When admitted it was found impossible to pass intubation tubes for either four or two years; and both tracheal tugging and opisthotonos being present, tracheotomy was done and an intubation tube inserted from below. From then on intubation had to be done a number of times, and tracheotomy once more, owing to inability to pass the tube from above. The vocal cords remained paralysed more or less, until near the end of the treatment. During the whole period strychnine was administered in full doses. When the patient finally left the hospital, her respiration was still laboured and the voice hoarse. Three months later when examined both vocal cords were still deficient in abduction, and on deep inspiration they assumed the cadaveric position.

Price-Brown.

Pepler, W. H. (Toronto).—*Case of Cancer of Oesophagus.* "Canadian Journ. of Med. and Surg.," August, 1909.

This is the history of a case occurring in a young man, aged thirty-seven, whose father died of epithelioma of the lip at the age of forty-three years. The symptoms, examination by oesophageal tube, and also by X-ray revealed the site of the growth to be near the cardiac end of the oesophagus. Direct examination by oesophagoscope discovered a small necrotic nodule, from which a small piece was removed and examined. From this the diagnosis of carcinoma was verified. As rapid loss of weight and exhaustion were developing, gastrostomy was decided upon. The operation was performed by Dr. Cummings and done by the invaginating method as recommended by Dr. Senn, jun. The operation made the patient more comfortable, he was able to take fluid nourishment by the natural method, and after chewing meats could swallow the juice without discomfort. The improved condition lasted for several months, his

general physical condition being benefitted by the operation, the major part of his food being passed in through the gastrostomy tube. He finally succumbed to the disease about ten months after the stomach was opened.

Price-Brown.

E.A.R.

Urbantschitsch, Viktor.—*On the Influence of Middle-ear Disease on the Sense of Smell.* "Monats. f. Ohrenh.," Year 44, No. 3.

In this article the author discusses a certain depreciation of the sense of smell which at times is apparently associated with lesions of the middle ear, though he says as far as his reading goes any reference to this condition is only to be found in Politzer's book, where it appeared in the first edition under the head of "chronic middle-ear discharge" and "was to be referred either to a simultaneous affection of the nasopharynx, or to a paresis of the olfactory nerve." The writer's attention was drawn to the subject whilst consulting the literature relating to anosmia, as he had lately under his care a case of otitic temporo-sphenoidal abscess in which the sense of smell was affected, and he was only able to find a description of three similar cases.

An account is then given of the results of some tests which were carried out on thirty cases of one-sided chronic middle-ear suppuration with heliotrope, eau de cologne, liquor ammonii anisati, oil of peppermint, and tar, weak solutions of which only were used in narrow-necked bottles which could easily be introduced into either nostril.

In about one third of the cases apparently the sense of smell was keener on the unaffected side, whereas in the remainder there was no appreciable difference, or, indeed, it was stronger on the affected side.

Although much time and labour was given to corroborate these findings and the results are discussed at length, it does not seem that any useful clinical assistance will be afforded by this experiment, and before reliable deductions can be drawn on these lines, some method must be adopted to occlude the posterior choana on the side under examination, and also structural intra-nasal irregularities must be taken into account, which latter point appears to have escaped attention.

Alex. R. Tweedie.

Barr, J. Stoddart, and Rowan, John.—*Optic Neuritis and Suppurative Otitis.* "Brit. Med. Journ.," March 26, 1910.

A continuation of the investigation published November 23, 1907. The conclusions arrived at are: (1) Optic neuritis may occur in cases of purulent middle-ear disease without obvious signs of an intra-cranial complication (11 times in 160 cases). (2) Apart from optic neuritis, vascular changes of a lesser degree are frequent (39 in 160 cases). (3) Cases of purulent middle-ear disease, in which the optic neuritis or vascular engorgement of the fundus is present, are much less amenable to local treatment than those in which the fundus is normal. (4) As a general rule, an improvement in the eye conditions is accompanied by improvement in the aural condition, while an increase in the intensity of the changes in the fundus or their persistence is associated with less amenability to treatment and greater gravity of the ear condition. (5) The most probable cause of vascular engorgement of the fundus or optic neuritis is serous meningitis (diffuse or localised). (6) Optic neuritis caused in this way is not usually followed by atrophy, and unless

there are other symptoms demanding it, opening of the dura mater is unnecessary.

Macleod Yearsley.

Sharpe, Alexander.—*Case of Audible Tinnitus.* "Lancet," January 8, 1910, p. 106.

This case was shown at the Leeds and West Riding Medico-Chirurgica Society. A man, aged forty-five, complained of a "scraping noise" in the right ear, which began twelve years previously after a "chill," and had been constant ever since. Hearing and appearance of membrana tympani normal. The murmur was heard by an observer's ear placed close to the patient's ear, and very distinctly with the otoscope. It was not unlike a very harsh cardiac murmur, and was synchronous with the pulse. Turning the head to the right side modified the sound, and it could be made to disappear by firm pressure over the right carotid artery. Heard with the stethoscope it was very loud, and could be recognised over any part of the head.

Macleod Yearsley.

Mackenzie, Geo. W.—*The Galvanic Tests of the Labyrinth Functions.* "Arch. f. Ohrenheilk.," Bd. 77, Heft 1 and 2, September, 1908, p. 1, and Bd. 78, Heft 1 and 2, December, 1908, p. 1.

The author, having employed the galvanic tests in a large series of cases, has come to the conclusion that this method of investigating the vestibular system is of definite clinical value. It is free from certain objections which he brings against the other methods, and, unlike them, can be relied upon to estimate hyper-excitability of the labyrinth. This opinion is, of course, at variance with what has been expressed by other investigators.

In health about 30 per cent. of all individuals experience tinnitus when a galvanic current of from 2-6 m.a. is passed through the head from one ear to the other, the tinnitus being referred to the ear at which the kathode is placed. At the same time, rotatory nystagmus is induced, also directed towards the side of the kathode.

With unilateral stimulation—the method he recommends for clinical purposes—one electrode is applied to the temporal region, the other being held in the patient's hand, and the reactions obtained are as follows: Rotatory nystagmus takes place and is directed towards the same side when the kathode is applied to the temporal region and towards the opposite side when the anode is applied. Vertigo is induced together with a tendency to fall to the side opposite to the direction of the nystagmus. On opening the current, when the anode is used, the body tends to fall to the opposite side, and on closing the current the head is inclined to the same side, and (with a stronger current) the body tends to fall towards the same side.

As regards nystagmus, etc., the results in health and when both labyrinths are inert are the same as those obtained by the other methods. In cases of unilateral disease, however, there is a distinct difference. A reduction of galvanic irritability was manifested by the affected ear in many cases, 14-16 m.a. being necessary to evoke the reaction. The anode and kathode gave opposite results; the anode reaction was more easily obtained in the affected ear; and on the other hand, the kathode reaction was more easily obtained in the sound ear. In certain cases of unilateral disturbance, hyper-excitability of the affected ear was observed in the appearance of the reaction on using a weaker current with the kathode at the affected ear, or with the anode at the sound ear. It is interesting to note that the cases which gave this result

with galvanism, nevertheless, when tested by rotation, showed a reduction in the duration of the nystagmus as compared with healthy cases. In this respect, therefore, the two methods of testing the labyrinth did not harmonise, and the author concludes that the galvanic method is the more reliable of the two.

Going further into the question and testing the effect of opening and closing the current in these cases, the author obtained the following results: With the electrode applied to the affected side, the kathode closure nystagmus was stronger than the kathode opening nystagmus, and the anode closure nystagmus weaker than the anode opening nystagmus. On the other hand, with the electrode applied to the sound side, the opposite results were obtained; that is to say, the kathode closure nystagmus was weaker than the kathode opening nystagmus, and the anode closure nystagmus was stronger than the anode opening nystagmus.

The strength of the current necessary to evoke the reaction in health being placed at 4 m.a., if the reaction takes place with 2 m.a. then the labyrinth is hyper-excitabile to that amount. In these circumstances the reaction is obtained by a 2 m.a. current with the kathode applied to the affected side, and by a 6 m.a. current with the kathode on the sound side—that is, the vestibular system behaves as if the excitability of the sound side were reduced.

Testing deaf-mutes he found that in most cases no reaction at all was obtained, even with the strongest currents that the patients could stand. A few, however, did react when subjected to a current of 8 to 12 m.a., and this he suggests was due to the stimulation of the nerve-trunk itself.

Dan McKenzie.

REVIEW.

Open-air at Home; Practical Experience of the Continuation of Sanatorium Treatment. By STANLEY H. BATES, with introduction by Sir JAMES CRICHTON-BROWNE, M.D., D.Sc., LL.D., F.R.S. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.

The continuance of open-air treatment and its actual facilitation are dealt with in this little work in a most instructive and practical way. The writer is evidently awake to all the requirements of the patient and is obviously a most judicious layman; he does not trench upon medical grounds, but shows how the experience of a sufferer can help him to evolve the details necessary for the carrying out of the principles taught him by his sanatorial medical officers. The working plans for the construction of open-air chalets are so clear that a skilled carpenter, or even an amateur, might make them.

D. G.

Our readers will hear with great regret of the recent death of Dr. E. Cresswell Baber, former President of the Laryngological Society. Our next issue will contain a portrait and obituary notice of this much-respected *confrère*.



THE LATE EDWARD CRESSWELL BABER, M.B. LOND.

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THE LATE EDWARD CRESSWELL BABER, M.B.Lond.

OUR readers will have learned with genuine distress of the loss which our specialty has sustained by the death of the late Mr. Edward Cresswell Baber, of London and Brighton, which took place at his London residence in Brook Street, Grosvenor Square, on May 14, at the age of fifty-nine. He has long been one of the most popular of figures in the British laryngological and otological world, and his manifold qualities led to his being regarded not merely with respect but with affection. He studied at St. George's Hospital and in Paris, where, under Ranvier and Malassez, he devoted himself with keenness to histology. Among his earliest achievements was the study of the minute structure of the thyroid gland, to which he contributed monographs which rank as classics. He further pursued his studies in Vienna, and on returning to this country he decided to devote himself to the practice of laryngology, selecting, on account of his health, Brighton in preference to London. There he founded with other local colleagues the Brighton and Sussex Throat and Ear Hospital, which has been a remarkably successful institution, and he attained a very enviable position in practice as a specialist. His work on the examination of the nose was one of the first of its kind; it has been found a valuable guide by many of his contemporaries and juniors, and has certainly done a great deal to strengthen the foundations of rhinology in this country. He contributed very clarifying papers on new points in laryngology and otology as they arose; his latest one, a review of

Bárány's most recent tuning-fork tests, must have been written almost on his death-bed. Among his various inventions we may recall a tongue depressor fitted with a hook for pulling forward the anterior pillar of the fauces or plica triangularis in the examination of the tonsil; also a dummy for the practice of palpation of the naso-pharynx by students, and more recently his roughened thimbles for putting on the thumb and finger when twisting cotton wool on a holder.

The present writer, in his capacity as President of the Section of Laryngology of the Royal Society of Medicine, uttered the following remarks, and in view of the acceptance which they received he feels justified in here reproducing them :

"Those who as his fellow-specialists came most closely in contact with him are those who miss him most, and among the whole group there is probably not one who will be more missed. The character of the man claimed for him the respect as well as the affectionate regard of all his associates. Behind the somewhat cynical manner of speaking which the casual observer might misinterpret, there lurked a depth of warm and genuine feeling which at once impressed those who had the privilege of enjoying the slightest intimacy with him. Shrewd and unerring in his judgment of men and action, nothing questionable, tricky or paltry escaped his instant detection. In his apparently cynical way he was able to indicate his recognition of the weak point while treating it with the gentle smile which was prompted by his infinite indulgence for weaknesses in his fellow men, which he would not have permitted in himself. While the quickest to perceive their shortcomings, he was ever ready to recognise and acknowledge whatever was good even in those whom it was fashionable to deery.

"Such being his intellectual and moral qualities, his social side was one of great charm. He took delight in giving and accepting invitations to informal little dinners of intimates, and always contributed largely to the gaiety and interest of the meetings, whether as host or guest. Frequent in his visits to congresses in other countries he was well known, and in his quiet way he made himself extremely popular among his foreign brethren. Indeed, the present writer has been struck with the frequency with which in his sojourns abroad he has received cordial inquiries about 'Bahbair.' In his domestic life a more than usually sympathetic companionship was his lot. His own uncertain health demanded and received the most cheerful care at the hands of his devoted wife, while she in her turn was the subject of his technical ministrations. These

mutual reciprocities seemed to bind them all the more tenderly to each other, and as their union was not blessed with children each seemed to find in the other the scope for that affection and solicitude which many find in their offspring. Under these circumstances Mr. Baber's many friends will feel unusual sympathy with his widow in her bereavement, and I am sure they will endorse every one of these few words of appreciation which I have felt impelled to utter regarding him."

NOTES ON THE PATHOGENY OF CHOLESTEATOMATA.

BY V. WYATT WINGRAVE, M.D.,

Pathologist, Central London Throat and Ear Hospital.

CHOLESTEATOMATA occurring in the petro-mastoid bone are of several varieties: (1) Those which are encapsuled or enclosed in a definite sac; (2) those which are diffuse, or possess no definite sac or wall, being generally associated with granulomatous and inflammatory changes; (3) those of a vestigial type or which originate in cell inclusions; (4) those which are believed to be composed of endothelial elements. The first and second type have chiefly been the subject of observation, and it is their probable pathogeny that will be considered in these notes.

The first, or encapsuled, type is seen as a pearl-like sac completely filling a space in the petro-mastoid, belonging either to the antro-tympanic chamber or its adjacent pneumatic cavities, from which it is sometimes easily removed. These cavities are normally lined by a single layer of short columnar or cubical epithelium resting upon a thin fibro-vascular endosteum. The sac of the cholesteatoma consists of a somewhat thickened fibro-vascular sheath, containing a few plasma-cells and lined by stratified epithelium similar to the Malpighian layer of the epidermis, consisting of columnar, spheroidal, and polyhedral cells in successive layers from below upwards. The mimicry is still further emphasised by the presence of eleidine granules in the layer which corresponds with the *stratum granulosum*, by prickly-cells and by the formation of papillæ. The horny layer is represented by the sac contents of closely packed and laminated acid-fast squames, either devoid of nuclei or simply showing their faint outlines. Between these cells are sometimes found amorphous fatty granules and rhombic crystals of cholesterin. This transformation constitutes a true metaplasia. How is it brought about?

The normal tympanic membrane externally is one of the driest structures in the body. Its meatal aspect is epidermal in structure, with a slightly greasy tendency, due either to fatty changes in its own epithelium or to the influence of adjacent ceruminous glands. Internally, however, it is moist and covered by a single layer of short or flattened cells, the rest of the tympanum containing either cubical or columnar epithelium, which in a few places is ciliated. The scarcely perceptible moisture is, except in morbid states, not due to flooding by any visible fluid, but is probably maintained by the high aqueous tension of the air enclosed in the tympanic cavity, the water being chiefly derived by exosmosis from the richly vascular muco-periosteum at body temperature rather than from secretion of mucous or albuminous glands, which are very scanty in the tympanum.

The average temperature of the meatus observed in healthy patients taken under constant condition was 93° F., having a range of from 90° F. to 96° F. It may therefore reasonably be assumed that the tympanic temperature is normally at least three degrees higher than the meatal temperature and consequently admits of a relatively higher degree of saturation. The presence of a perforation permitting the entrance of air will not only cause a fall in the mean temperature of the tympanum, but also a diminution of the vapour tension favourable to desiccation.

Observation of discharges, curettings, swabs, and other morbid material such as granulations, polypi, and neoplasms from the middle ear, together with *post-mortem* search, all prove that the normal epithelium is invariably replaced by squames after prolonged persistence of perforations. The metaplasia is not confined to the tympanic cavity, but involves its adjacent pneumatic spaces and its contents, such as granulomata and polypi. The new squamous epithelium, judging by comparison with cutaneous activity, is probably produced more rapidly and more abundantly than the normal columnar is, and there can be but little doubt that its cytolysis and disposal are also much more difficult; it therefore tends to accumulate, and a cholesteatoma results. Such a change is not peculiar to the ear, for identical conditions occur in the pharynx, larynx, nose, and its accessory sinuses whenever they are abnormally exposed to atmospheric influences. Nasal polypi are often seen to be covered with epithelium on their exposed surfaces, normal ciliated cells being found on the protected and deeper portions. A chronic inverted uterus or a prolapsed rectum shows similar metaplastic changes.

Cholesteatomatous formation may, however, be influenced by other factors, such as the irritation of bacteria, toxins, tryptolysis, dust, etc. Powell White (1) has recently shown that epithelial metaplasia can be produced by injecting fatty acids. Since these have already been shown (2) to be responsible for acid-fast properties in bacteria, etc., and that these acids are ever present in chronic suppuration of the middle ear, it is not at all unlikely that they should be important factors in cholesteatomatous changes. Fortunately a large proportion of cholesteatomata are sterile, nor is there any evidence of past or present inflammatory processes in their sacs. But a simple or non-inflammatory cholesteatoma is always liable to infection, and so to become the seat of activity.

The process of desiccation may also be due to changes in the quality and quantity of the local secretions, for, although the antrum and its adjacent spaces are deficient in glands, the epithelium itself may be secretory in function.

Occasionally bacteria of the mycelial type are found among the squames, and their saprophytic reputation must be regarded with some suspicion in such a situation.

The *second*, or *granulomatous*, variety of cholesteatoma is very different in appearance and structure. It is rarely encapsuled, and is generally fragmented when removed by operation, being mixed with granulation tissue, blood, and bone-spicules, so that its actual nature may sometimes be only established by the microscope. Granulomatous elements covered with stratified epithelium will be found embedded in loose lymphocytes, leucocytes, myelocytes, and squames in all stages of fatty and granular changes. The squames may be loose or grouped in closely laminated "pearls," having for the most part lost their nuclei and become strongly acid-fast. Bacteria of all kinds are mixed with the cells, such as staphylococci, streptococci, streptothrices, diplococci, and the characteristic throat organisms—spirochaetes, fusiform bacilli, yeasts, leptothrices, cladothrices, etc. Several forms of acid-fast bacilli, including tubercle, are often seen. In this type of cholesteatoma there is the additional irritation of bacteria, toxins, fatty acids, and other tryptolytic products of cell destruction.

The caseous residue of old suppuration closely resembles cholesteatomatous material on removal, but it will be found on examination to be entirely free from squames, and affords no evidence of any epithelial sac. This type is often tubercular and associated with caries.

The only available examples of the vestigial or "inclusion" type occurred in the auricle in the form of cholesteatomatous cysts embedded in the cartilage of the helix, quite unlike sebaceous cysts.

Cholesteatomata originating by metaplasia of endothelial cells, apart from their occurrence in adjacent brain and meningeal tumours, were but rarely found. As in tonsillar and adenoid tissue, their histological transition was observed in a few granulomata, probably of tubercular origin. Their usual tendency, however, is to caseous degeneration.

It is suggested that cholesteatomata are primarily caused by the prolonged admission of air to the antro-tympanic cavity, which by lowering its aqueous tension causes desiccation and so gives rise to a true metaplasia of its lining epithelium, and that the irritation of bacteria, toxins, and cytolytic products are supplemental factors.

Specimens shown :

- (1) Cholesteatoma sac with contents.
 - (2) Acid-fast squames in discharge.
 - (3) Mycelial infection.
 - (4) Granulomatous cholesteatomata.
- Metaplastic changes in maxillary antrum.
Cholesteatomatous changes in tonsils.
Cystic cholesteatoma of auricle.

REFERENCES.

- (1) POWELL WHITE.—*Brit. Med. Journ.*, 1910, i, p. 813.
- (2) WYATT WINGRAVE.—*Proc. Roy. Soc. Med.*, 1908, i (Otol. Sect.), p. 95.

CONGENITAL INSUFFICIENCY OF THE PALATE.

By A. BROWN KELLY, D.Sc., M.D.,

Surgeon for Diseases of the Nose and Throat, Victoria Infirmary, Glasgow.

(Concluded from p. 300.)

Pathology.

VARIOUS explanations have been advanced to account for insufficiency. Passavant, and later Wolff and Kayser, attributed it to a great shortness of the soft palate. Langenbeck blamed a faulty education in phonation. Trélat pointed out that the

insufficiency following cleft-palate operations was due to shortness of the hard palate. Lermoyez emphasises the correctness of this observation, and in the same way accounts for congenital velopalatine insufficiency. He regards this condition as due to defective development of the hard palate only, the soft palate never being too short. He maintains that in all such cases a triangular gap is present at the posterior edge of the hard palate, and that the uvula is bifid. Gutzmann holds that insufficiency is due simply to the soft palate being too far from the posterior wall of the pharynx, and that this is produced by too great shortness of the hard palate in some and of the soft palate in others.

Measurement in Living Subject of Hard and Soft Palate and Depth of Pharynx.

Technique.—In order to determine whether insufficiency is due to abnormal shortness of the hard or soft palate, the length of these parts was measured in all the cases that came under my notice. For purposes of comparison a standard was obtained by finding the average measurements in persons in whom the palate and depth of pharynx were apparently normal.

In making these measurements, the anterior landmark taken was the gum between the central incisors, or, when the teeth were absent, the middle of the alveolar border. The posterior nasal spine was regarded as the boundary between the hard and the soft palate. The soft palate was measured from this point to the base of the uvula, or when the uvula extended up on the soft palate, to a line on a level with the junction of the faucial arches and uvula. A third measurement made was that of the naso-pharyngeal opening; this was taken from the edge of one faucial arch to the opposite or nearest point on the posterior wall of the pharynx.

In cases with notching of the hard palate, the apex of the notch was regarded as the point demarcating the hard from the soft palate. This made a convenient landmark, but has objections (see "Fallacies"). Owing to the variable length of the incisors and uvula these have been left out of account. As the arch of the fauces does not always lie in the coronal plane, but may pass backwards and outwards from the uvula, measurements to and from the arch were taken close to the uvula. While the depth of the pharynx was being measured the patient was caused to hold his head straight and completely relax the palate. These details are noted because some writers have taken their measurements from the edge of the

central incisors to the tip of the uvula, while others estimate the naso-pharyngeal opening during contraction of the palate. In spite of every care such measurements cannot be absolutely accurate: the exact demarcation of the posterior nasal spine is especially difficult when the overlying soft tissues are thick.

The method I adopted was to indicate with a copying pencil, in the middle line, the junction of hard and soft palate. A narrow strip of moist paper was then laid along the palate from the base of the uvula to the middle of the upper alveolus and the distances marked off. The space between the soft palate and posterior wall of the pharynx was easily determined by a sliding measure. Instead of paper, a flexible wire (Kayser, Gutzmann) or strip of metal (Lermoyez) may be used.

Average Measurements in Normal Subjects.—I shall first deal with the measurements in normal individuals, and afterwards compare them with those obtained in cases of insufficiency.

Hard Palate.—In ten adults (male and female) in whom the length of the hard palate was between 44 and 60 mm., the average was found to be 50.6 mm. By other writers the normal length is variously stated, *e. g.* Luschka, 45 mm.; Kafemann and Kaminski, 44.9 mm.; Charon, 50 to 52 mm.; Trélat, 55 to 60 mm.; Botey, 58 to 59 mm.; Lermoyez, 61.4 mm. The last three sets of measurements were made from the free border of the superior incisors, so that their length, usually 5 to 8 mm., has to be deducted.

Soft Palate.—In my ten cases the average length of the soft palate was 29.4 mm. Lermoyez puts this at 24.2 mm.; he therefore finds the soft palate shorter and the hard palate correspondingly longer than I do. Nengebauer's average is 31 mm. (32 mm. for men and 30 mm. for women). Gutzmann took the measurement in twenty persons, aged from five to seventeen years; the average of these is 25 mm.

Naso-pharyngeal Opening.—The distance between the soft palate and posterior wall of the pharynx in ten ordinary cases averaged 12.1 mm. In other ten cases chosen on account of the marked depth of the pharynx, the measurements gave an average of 20.5 mm. The mean of these two results, 16.3 mm., approaches the average given by Kayser and Lermoyez, *viz.* 15 mm., which I shall adopt.

We may therefore take the following as standard measurements in adults: Hard palate, 50 mm.; soft palate, 30 mm.; and naso-pharyngeal opening, 15 mm. Let us see in how far these figures may be departed from even in the normal subject.

PLATE II.

FIG. 26.



TO ILLUSTRATE DR. A. BROWN KELLY'S PAPER ON CONGENITAL INSUFFICIENCY OF
THE PALATE.

Variations in Measurements in Normal Subjects.

	Hard palate.	Soft palate.	Naso-pharyngeal opening.
Standard measurements	50	30	15
Normal subject with long hard palate	60	29	12
" " " short hard palate	44	31	10
" " " long soft palate	50	38	14
" " " short soft palate	53	23	12
" " " deep pharynx .	45	27	22
" " " shallow pharynx	48	34	8

These figures prove that in normal individuals there may be considerable divergence from the standard measurements. It should further be noted that there is no evident relation between the three measurements in any one person; thus, a long, hard palate is not necessarily associated with a short, soft palate, or a short, soft palate with a wide naso-pharyngeal opening, etc.

Measurements in Cases of Submucous Cleft Palate with Insufficiency.

Reported by—	Sex.	Age.	Notch.	Uvula.	Hard palate.	Soft palate.	Naso-pharyngeal opening.
Author (1) . . .	M.	14	Very large	Short	40	25	20
" (2) . . .	M.	45	Moderate	"	46	32	15
" (3) . . .	F.	28	Very large	Very short	30	30	17
" (4) . . .	M.	7	Moderate	Bifid	29	27	16
" (5) . . .	M.	6	"	Short	29	24	10
" (6) . . .	F.	18	"	Bifid	31	28	17
" (7) . . .	F.	30	"	Very short	37	27	15
" (8) . . .	M.	13	Large	Bifid	30	24	20
Kayser . . .	F.	24	—	"	30 ¹	28	30 ¹
Lermoyez . . .	F.	20	6 mm.	"	40 ¹	24	20 ³ 10 ²
Gutzmann . . .	F.	10	—	Not bifid	49 ¹	16 (?)	5 ²
Egger (1) . . .	M.	18	Small	Normal	48 ¹	28	15 ³
" (2) . . .	M.	17	5-7 mm.	—	58 ¹	25	22 ⁴
Rouvillois . . .	M.	20	10 mm.	Bifid	45 ¹	30	20 10 ²
Philip . . .	F.	25	Large	—	51 ¹	28	21

¹ From cutting edge of central incisor.² During intonation or forced contraction of palate.³ " From posterior surface of uvula."⁴ " From root of uvula."

In the majority of my cases the measurement of the hard palate was confirmed on casts taken by Mr. W. Holt Woodburn, L.D.S., whose valuable assistance I have pleasure in acknowledging.

Of the writer's eight patients only four were adults. The

averages of the measurements in these latter are: hard palate, 38.5 mm.; soft palate, 29.25 mm.; depth of pharynx, 16 mm.

Before considering the significance of these figures I shall refer to the class of case in which there is a minor degree of submucous cleft but no insufficiency.

Measurements in Cases of Submucous Cleft Palate without Insufficiency.

(All the undernoted were adults.)

	Sex.	Notch.	Uvula.	Hard palate.	Soft palate.	Naso-pharyngeal opening.
1	F.	Very small	Half bifid	55	30	15
2	F.	Wide	"	40	35	13
3	M.	Moderate	"	40	30	15
4	M.	Marked	"	38	35	13
5	M.	"	"	37	31	13
6	M.	Small	Quarter bifid	48	37	14
7	M.	Marked	All bifid	39	30	16
8	F.	Small	Half bifid	51	27	16

The averages of the above measurements are: Hard palate, 43.5 mm.; soft palate, 32 mm.; and naso-pharyngeal opening, 14 mm.

Comparison of Average Measurements:

	Hard palate.	Soft palate.	Naso-pharyngeal opening.
Standard	50	30	15
Submucous cleft palate without insufficiency	43.5	32	14
Submucous cleft palate with insufficiency	38.5	29.25	16

In comparing the above averages it would appear that the most marked deviation from the normal is in the length of the hard palate. In submucous cleft palate without insufficiency there is shortening equal to about that of an average notch, but with insufficiency the cleft is decidedly deeper. The measurements of the soft palate, on the other hand, do not differ much from the standard.

Fallacies in Measurements of Hard and Soft Palate.—There is no doubt, however, that fallacies arise in consequence of taking the apex of the notch as the place of junction of the hard and soft palate. The hard palate is thus made to appear too short and the

soft palate too long. The difficulty, however, is to find another convenient point of demarcation. A more correct estimate of the length of the respective parts will be obtained if the hard palate is considered as somewhat longer, and the soft palate as somewhat shorter, than the averages above quoted. The measurements of the soft palate will then be less than the standard even when there is no insufficiency, and considerably less when insufficiency is present. Such results are to be expected, for in ordinary cleft palate there is not only division between the two halves, but these are below the normal in size.

The measurements also show that the distance between the soft palate and posterior wall of the pharynx is only slightly more than ordinary, proving that the cause of the insufficiency does not lie therein. The depth of the pharynx may be much greater than the standard—in a number of normal individuals I have found it to measure from 20 mm. to 25 mm.—and yet there may be no insufficiency. In such cases during quiet respiration it may seem scarcely possible for the palate to reach the posterior pharyngeal wall, nevertheless, when brought into action complete closure is effected.

Deductions from Measurements.—From a study of the various measurements that have been made the following conclusions may be drawn in regard to the conditions present in submucous cleft palate: (1) The length of the entire palate is less than normal. (2) This diminution is due to a shortening of the hard palate according to the measurements, but in reality to a shortening of both the hard and soft palate. (3) When the shortening is slight there may be no insufficiency. (4) When the shortening is considerable the insufficiency is marked. (5) The depth of the pharynx may be rather greater than the standard, but even then it is much less than is often seen without insufficiency. (6) The depth is not inversely proportionate to the length of the hard, soft, or entire palate.

Submucous Cleavage of Soft Palate.—While the cleft in the posterior part of the hard palate and the shortening of the soft palate have been shown to be factors in the causation of insufficiency, a scarcely less important one, in my opinion, is the submucous cleft between the muscles of the two halves of the soft palate. In consequence of the latter condition the action of the levator muscles is largely in abeyance, as has already been pointed out (see "Anatomy"). It is not improbable that the absence of insufficiency in certain cases of notching of the hard palate is due

to a more or less complete union having taken place between the muscles of the two halves of the soft palate. The activity of the latter then counter-balances the shortening of the former.

Ætiology.

Submucous cleft palate is due manifestly to imperfect closure of the palatine cleft in the fœtus. Normally, this closure is effected by the joining of the palatal processes, which takes place in the middle line before backwards. The palate plates of the superior maxilla first come together and later those of the palate bones. If development is interrupted so that the two halves remain apart, cleft palate is the consequence. On the other hand, if development proceed far enough to allow of the union across the middle line of the epithelial coverings of the palatal processes, but is checked before the mesoblast contained in these processes can also effect a meeting, submucous cleft palate results.

As to the cause of the interrupted development no satisfactory explanation can be offered. It is evident, however, that the underlying condition at fault is hereditary or familial, and may show itself in the same or various aspects in several members of a family. Thus, one of Passavant's patients had a sister with cleft palate; one of Trélat's patients had two daughters with congenital perforations of the palate, of whom one had in addition a short and notched hard palate; Kayser's patient had a brother and sister with complete cleavage of the palate; Gutzmann found insufficiency in both a father and daughter; and one of my patients with submucous cleft palate, but no insufficiency, had an older brother with cleft palate.

II. CONGENITAL MUSCULAR INSUFFICIENCY OF THE PALATE.

Examination.

In this variety the soft palate, when at rest, appears normal; it is neither too short nor stretched transversely. In none of my cases was the uvula bifid. No notching of the hard palate, and no scarring of the mucous membrane, such as described in submucous cleft palate, are found. On palpating the naso-pharynx, the finger is gripped by the palate weakly, or not at all. The postero-inferior part of the vomer is normally developed, consequently the septum is not shortened. Usually adenoids are scanty or *nil*, while the posterior ends of the inferior turbinates are enlarged.

In short, muscular insufficiency becomes evident only on testing the movements of the soft palate, when these are found to be defective or otherwise abnormal. In most of the cases the palate is only slightly raised, and even when prodded, the stimulus fails to excite sufficiently vigorous contraction to bring it into contact with the posterior pharyngeal wall. Other abnormal conditions may co-exist. Thus, the place of maximum retraction of the palate, instead of being about 5 mm. above the base of the uvula, which is the usual situation, as already pointed out, was noted in different cases to be 13, 17, and 19 mm. In two patients the left faucial arch was higher than the right, and in one of these the raphé curved to the right. In another the spot of maximum retraction was above the uvula, but to the right of the middle line, so that when elevated the palate was drawn up and to the right.

Pathology.

It is desirable in the first place to find whether a part is played in the pathogenesis of muscular insufficiency by an abnormality in the length of the hard or soft palate, or in the distance of the latter from the posterior wall of the pharynx. For the determination of these points the measurements in the cases observed by me are given below.

Measurements in Cases of Muscular Insufficiency of the Palate.

	Sex.	Age.	Hard palate.	Soft palate.	Naso-pharyngeal opening.
Standard measurements . . .	—	—	50	30	15
Reported by author (1) . . .	F.	23	53	25	18 14 ²
" " (2) . . .	F.	17	45	20	14
" " (3) . . .	F.	30	45	29	15
" " (4) . . .	F.	29	46	28	18
" " (5) . . .	F.	29	49	38	21
" " (6) . . .	F.	8	43	21	—
" " (7) . . .	F.	30	47	29	20
" " (8) . . .	M.	25	53	33	20
" " (9) . . .	F.	29	54	33	14
" " (10) . . .	F.	17	55	32	21 16 ²
" " (11) . . .	F.	37	47	21	13
" Castex . . .	M.	12	50 ¹	22	15
" Gutzmann (1) . . .	F.	13	58 ¹	14	11 ²
" " (2) . . .	F.	14	60 ¹	18	—

¹ From cutting edge of central incisor.

² Soft palate raised.

In considering the above measurements it should be noted that of the writer's eleven patients, ten were females. Leaving the one child out of account, the average length of the hard palate is found to be 49.5 mm., and of the soft palate 29 mm.; both of these are practically the same as our standard measurements. The average depth of the pharynx is 17.5 mm., which is more than the standard, but less than that often observed in subjects who have no insufficiency. It is evident from these figures, therefore, that the insufficiency, as a rule, can neither be attributed to abnormal shortness of the hard or soft palate, nor entirely to undue depth of the pharynx. On looking over the measurements in the individual cases, however, the shortness of the soft palate in Cases 2 and 11 is seen to be such as could hardly fail to favour the production of insufficiency.

Inspection of the parts during phonation, etc., shows the chief, if not sole, cause of the insufficiency to be impaired movement of the palate. This may be due to interference with the nervous supply or to a muscular defect.

Differentiation of Muscular Insufficiency from Paralysis of the Palate.—The appearance is certainly suggestive of a partial paralysis. It must be remembered, however, that in these cases the insufficiency has been noticed from the time the patient began to speak and is presumably congenital, that there is no history of any illness or injury likely to have affected the nerve supply, and that there is a complete absence of associated paralyses.

In order to draw further distinctions, the question might be viewed from the standpoint of paralysis of the palate. With reference to unilateral paralysis, I cannot do better than base my remarks upon Mamm's elaborate contribution. After careful study of a subject to which previously but little attention had been paid, he differentiates unilateral paralysis of (1) the tensor, (2) the pharyngo-palatinus, and (3) the levator and corresponding half of the uvula. In (1) the symptoms and aetiology were very indefinite. In (2) laryngeal paralysis in some patients and regurgitation by the nose in others were also present. In (3) most of the patients had facial paralysis of the same side. It is evident from the mention of these few features that he is dealing with cases entirely different from those of congenital muscular insufficiency of the palate. In the reports of his cases I find no mention of rhinolalia aperta. This symptom has occasionally been present in patients with unilateral paralysis of the palate who have come under my

notice, but was not striking, or was masked by a defect in the speech of another and more marked character.

On the other hand, a close similarity exists between bilateral paralysis and muscular insufficiency, so that some might be inclined to regard the latter as a congenital variety of the former. It should be emphasised, however, that in insufficiency there is not merely want of power in raising the palate, but, in some cases at least, this power is manifestly misapplied, making it impossible for satisfactory closure to take place. I refer particularly to those cases in which the place of maximum retraction is situated too far forward.

Relation of Muscular Insufficiency to Muscular Abnormality in the Palate.—It seems to me that the true explanation of muscular insufficiency lies in the defective development or abnormal disposition of the muscles of the soft palate. Submucons cleavage of the soft palate in part or all of its extent may exist without involvement of the hard palate. Asymmetry of the palatal muscles and marked individual differences occur, as has been demonstrated by Rüdinger. It has also been pointed out by Réthi that one half of the azygos uvulæ is comparatively often less developed than the other, and shows signs of degeneration. These observers suggest that this is the cause of the obliquity of the uvula frequently seen both at rest and during contraction of the soft palate when there is no paralysis. If we remember that the muscles composing the soft palate enter it from almost every direction and are required to execute the most diverse movements with precision, it is easily conceivable that in a region which is frequently the seat of developmental defects, some disturbance in the muscular arrangement, *e. g.* imperfect union of the two halves, faulty interlacing of the fibres, or unequal development of corresponding muscles might readily arise, such as would render the action of the palate insufficient.

As illustrating the results of developmental disturbances without insufficiency, I would point to the fairly large class of patients in which a variety of appearances is produced, in some during relaxation, in others during contraction of the palate, by asymmetry of the faucial arches, or deviation from the middle line of the uvula, raphé, or point of maximum contraction.

The evidence as above adduced is by no means conclusive; nevertheless, I think it goes far to show that the condition under discussion is not a paresis but due to a muscular defect, and that it may therefore be correctly termed "congenital muscular insufficiency of the palate."

DIAGNOSIS.

Congenital insufficiency of the palate is characterised by the inability to raise the soft palate sufficiently to effect physiological closure of the mouth from the naso-pharynx, and the outstanding symptom is rhinolalia aperta which dates from the time the patient began to speak.

No difficulty is usually experienced in deciding as to the presence or absence of rhinolalia aperta. If it is desired to test the closure between the soft palate and posterior pharyngeal wall Gutzmann recommends Hartmann's method. An olive is inserted into each nostril, one being connected with a bellows and the other with a manometer. While the patient sounds a vowel air is blown in, and if closure is complete the pressure can be read off. In cases of insufficiency there is no movement of the mercury even when the vowels requiring strongest closure are pronounced. Absolute closure, however, is not essential to normal speech, as proved by the experiments of Passavant and Moritz Schmidt, and confirmed by Gutzmann's observations during the oral treatment of patients after cleft palate operations. A palate may therefore be insufficient up to a certain degree without causing defective speech; within this degree physiological closure may be said to take place.

The two conditions included under the term "congenital insufficiency of the palate" are easily differentiated by inspection and palpation. In the one, submucous cleft palate, the more prominent features are notching of the posterior edge of the hard palate, shortening of both hard and soft palate, and ineffective muscular action. In the other, congenital muscular insufficiency, there is simply imperfect muscular action without notching or shortening of the hard palate, and only exceptionally with shortening of the soft palate. These features are so distinctive as almost to preclude the possibility of confusing congenital insufficiency of the palate with other diseases. In functional rhinolalia aperta, however, we have a similar but little-known affection, which therefore falls to be considered here.

Functional Paresis of the Soft Palate or Functional Rhinolalia aperta closely resembles congenital muscular insufficiency. The few cases I have met with were in women who were neurasthenic, hysterical, or suffered from a lowered state of the general health. No sore throat or other definite cause could, as a rule, be assigned for the onset. The open nasal speech lasted in some for only several

hours or days at a time; in others uninterruptedly for months. It was aggravated by fatigue, excitement, conversation and colds. In one case it alternated with functional aphonia, so that as long as the patient could merely whisper articulation was normal, but on regaining her voice the rhinolalia aperta was re-established. Several complained of want of power in swallowing and even of slight regurgitation. On inspection and palpation the palate was found to be normal in conformation, but during phonation its movement was *nil* or greatly diminished. Slight stimuli had no effect, but vigorous probing excited contraction so that it was perfectly raised. There was no appreciable loss of sensation. Tonics, faradism, and high frequency in marked cases were without apparent benefit. Briefly stated, the distinguishing characters of the two affections are as follows: Functional rhinolalia aperta comes on at any age, usually during a period of ill-health; it may be accompanied by slight disturbance of the power of deglutition, the mobility of the palate is largely or entirely gone, but on stimulation the contraction is physiologically sufficient, the symptoms vary in intensity from time to time and ultimately pass off. Muscular insufficiency, on the other hand, is a congenital affection, which is unaccompanied by trouble with deglutition; the palate even when stimulated does not reach the posterior pharyngeal wall, and the condition is permanent and has no periods of temporary improvement.

Paralysis of the soft palate due to diphtheria, lacunar or membranous tonsillitis, is distinguished by the history of previous sore throat, involvement of deglutition, non-response of the palate to probing, and the clearing up of the condition under treatment. The paralyses due to central nervous disease are generally unilateral and associated with paralysis of neighboring parts.

PROGNOSIS.

The constant efforts made by those with rhinolalia aperta to produce normal speech usually tend to gradual improvement. In very marked cases, as a rule, the open nasal quality persists throughout life, although the pronunciation of consonants comes to be perfect. Minor degrees in children may in a large measure be mastered as age advances. Several normally speaking adults, in whom the distance between the soft palate and posterior pharyngeal wall was strikingly great, have told me, in answer to my inquiries, that they spoke indistinctly when young. In these, slight

insufficiency was probably present in early life and was subsequently compensated.

TREATMENT.

Insufficiency of the palate may be compensated either by increasing the mobility or length of the palate, or by reducing the size of the opening between it and the posterior pharyngeal wall. The former is the chief indication in muscular insufficiency, the latter in submucous cleft palate.

To increase the elevating power of the palate various methods have been employed. Faradism has not been of much benefit. Exercises in articulation and in loudly intoning the vowels have proved more useful. In suitable cases probably the best and most easily applicable means at our disposal is massage of the soft palate as advocated by Gutzmann. He employs a kind of lever consisting of flat German silver wire bent to follow the hard palate, and furnished at its distal end with a disc of gutta-percha. With this, while speech is practised the soft palate is strongly raised and massaged so that stretching is effected.

Lermoyez refers favourably, but evidently without personal experience, to the use of an artificial palate. This has not been employed in any of the cases on record, so far as I know, nor can I see how an appliance of the kind could be successfully adapted for the purpose in view.

Most of the procedures devised to overcome the insufficiency that occasionally remains after cleft-palate operations are applicable to the class of case under discussion.

Passavant's methods of uniting the soft palate to the posterior wall of the pharynx, so that while the rhinolalia aperta is abolished rhinolalia clausa is produced and nasal respiration becomes impossible, need only be mentioned to be condemned. H. J. Paul's recommendation to make the palate broader and more mobile by lateral incisions is of doubtful value.

Botey has recently described a method of operating on cases of congenital insufficiency, whereby he aims at approximating the soft palate and posterior pillars to the posterior pharyngeal wall. From the middle of the posterior wall of the pharynx he raises an elliptical flap 30-40 mm. long by 12-16 mm. broad. The centre of the flap is in the middle of the oro-pharynx, the upper extremity is slightly hidden by the soft palate, the lower by the base of the tongue. The edges of the wound are afterwards brought together by sutures.

He has operated on three patients; the results have not been absolutely perfect.

The injection of paraffin into the posterior wall of the pharynx suggests itself as a means of lessening the insufficiency. Owing to the frequent movements of the superior constrictor it would probably be necessary to inject above Passavant's cushion, in which situation it is doubtful whether the benefit desired would be obtained.

CONCLUSIONS.

(1) Congenital insufficiency of the palate may be defined as a congenital affection in which the soft palate does not effect the physiological closure of the naso-pharynx from the oral cavity, and rhinolalia aperta results.

(2) The imperfect closure may be due to submucous cleft palate or muscular insufficiency of the palate.

(3) Submucous cleft palate is characterised by the presence beneath the intact mucous membrane of a notch or gap in the posterior part of the hard palate, and the imperfect union in the middle line of the muscles of the two halves of the soft palate, also by a shortening of the hard and soft palate.

(4) In submucous cleft palate the epithelial coverings of the palatal processes have united across the middle line, but development has been interrupted before the mesoblast contained in these processes has also effected a meeting.

(5) A submucous cleft palate may be sufficient or insufficient according as rhinolalia aperta is absent or present.

(6) The conditions in submucous cleft palate which determine sufficiency or insufficiency are: The length of the hard and soft palate, the degree and mode of elevation of the soft palate, the depth of the pharynx, the degree of prominence of Passavant's cushion, and the amount of approximation of the palato-pharyngei.

(7) Submucous cleft palate without insufficiency is present in about 20 per cent. of those with bifid uvula.

(8) In an examination of over 3500 skulls, only two (Figs. 3 and 4) and a doubtful third (Fig. 5) were found in which the anatomical condition of the palate corresponded to that present in marked cases of submucous cleft palate as revealed by palpation, measurement, and X-ray examination. Specimens showing a slight degree of cleavage as in Figs. 7-10 were not infrequently met with.

(9) Congenital muscular insufficiency of the palate is characterised by imperfect elevation of the palate during phonation, owing to defective or abnormal muscular action.

(10) In congenital muscular insufficiency there are no signs of interrupted development, such as are associated with submucous cleavage of the palate, *e.g.* notching of hard palate, non-union of muscles in middle of soft palate, bifid uvula, shortness of hard and soft palate.

(11) The cause of muscular insufficiency of the palate is probably not a paresis, for the following reasons: The rhinolalia aperta is noticed from the time the child begins to speak; there is nothing in the early history to account for a paralysis, there are no associated paralyses, and the insufficiency is due, in some cases at least, not merely to want of power to raise the palate, but to the elevating force being misapplied.

(12) The probable cause of congenital muscular insufficiency of the palate is the defective or unequal development, or abnormal disposition, of the muscles of the soft palate. The occurrence of such conditions is known anatomically, but their relation to the disease under discussion has not yet been proved.

(13) Minor degrees of these muscular abnormalities may be present without insufficiency.

(14) The insufficiency in submucous cleft palate is due to the palate being too short or too far from the posterior pharyngeal wall; the insufficiency in congenital muscular insufficiency is due to neither of these causes, but to the weak and ineffective action of the levators of the palate.

(15) Average measurements in submucous cleft palate show: (1) That both hard and soft palate are shorter than normal. (2) That the amount of shortening corresponds, as a rule, to the degree of insufficiency. (3) That the pharynx is only slightly deeper than normal. In congenital muscular insufficiency the measurements scarcely differ from the normal.

(16) The speech is similarly affected in both varieties of congenital insufficiency of the palate, but while in submucous cleavage there is simply rhinolalia aperta, in muscular insufficiency certain of the letters may also be imperfectly formed.

(17) The absence of regurgitation in all of the cases proves that deglutition can be satisfactorily performed with a palate which is either too short to reach the posterior wall of the pharynx, or in which the muscular action is insufficient to bring it into contact with the posterior wall of the pharynx.

(18) The ears are affected in nearly 80 per cent. of all cases; in submucous cleft palate the complications are more frequent and more severe than in muscular insufficiency.

(19) The mental and physical development of subjects of congenital insufficiency of the palate are sometimes much below the average.

(20) Various objective conditions have been pointed out as more or less commonly associated with submucous cleft palate, *e.g.* scarring of the mucous membrane near the notch, bitid uvula, stretching of the pillars of the fauces, increased obliquity of the posterior edge of the septum, hare-lip. In addition, attention is here directed to the appearance of the soft palate, which presumably arises from non-union of the muscles in the middle line, and to the occasional presence of a supernumerary tooth.

(21) Functional rhinolalia aperta lasting for months is the only affection likely to be confused with congenital muscular insufficiency of the palate; consideration of the history of the case will allow of a distinction being drawn.

(22) The prognosis in children in slight cases is favourable; some make a perfect recovery. Marked cases and adult subjects may be improved, but a considerable degree of rhinolalia aperta usually persists.

(23) The best treatment is probably Gutzmann's method of massaging and stretching the soft palate.

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SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

Meeting, Friday, June 3, 1910.

DR. DUNDAS GRANT, *President, in the Chair.*

Abstract Report of Proceedings by Dr. DAN MCKENZIE.

THE following cases and specimens were shown :

LARYNGEAL PARALYSIS, FOLLOWING PARTIAL REMOVAL OF THE THYROID GLAND.

BY MR. SOMERVILLE HASTINGS.

A woman, aged forty-one, had suffered from goitre for fifteen years. The whole gland was extensively involved, but the left side more than the right. On May 2, 1910, the greater part of the tumour was removed piecemeal by resection-enucleation. In doing this the right superior and the left inferior thyroid arteries were divided. Loss of voice and slight dyspnoea were noticed immediately after the operation, but owing to an attack of broncho-pneumonia the

examination of the larynx was deferred to May 24. The patient was now unable to cough; she spoke with much waste of air in a feeble, musicless voice. There was some expiratory stridor. The cords were pale; they were held immovable in incomplete adduction, and flapped forward in expiration.

The PRESIDENT remarked that the removal seemed to have been very thorough.

Mr. TILLEY asked whether the operator had seen the recurrent nerve. A prominent surgeon had recently told him that if the recurrences were not seen during the operation they could not be injured, because the nerves would not then come into the region of operation.

Mr. FITZGERALD POWELL thought that piecemeal removal of the thyroid was more likely to damage the nerves than complete removal of a portion of the gland as a whole. The nerves could be damaged by ligature, cutting, or inclusion in scar-tissue; in this case it was probably the last, as he thought there was some movement still in the left cord. After a time the cords would improve.

Dr. WATSON WILLIAMS asked whether the larynx had been examined before operation. Some cases of paralysis by pressure of the tumour on the nerves were overlooked.

Dr. DAN MCKENZIE had heard it stated, in opposition to the opinion which Mr. Tilley had quoted, that the only method by which the safety of the recurrent could be ensured was to identify the nerve during operation so that it could be avoided. Some years ago he had read an article in which the variability of the nerve was emphasised; sometimes it passed in front and sometimes behind the inferior thyroid artery.¹ This circumstance supported the view that the identification of the nerve during operation was the best way to avoid its being injured.

Dr. MILLIGAN thought that the paralysis of the cords in this was complete. The prognosis was bad.

The PRESIDENT said there was very little evidence of the expiratory stridor which was present before, and which he thought was due to the typical scabbard-shaped narrowing of the trachea. He thought there was likely to be but little change in the laryngeal paralysis.

Mr. SOMERVILLE HASTINGS, in reply, said that the operation had been performed by a colleague, and he himself had not seen the case until after the operation. The larynx had not been examined before. The cords showed no active movement whatever.

TUBERCULOSIS OF THE LARYNX, WITH EXTREME ODYNPHAGIA, RELIEVED BY INJECTION OF ALCOHOL INTO THE LEFT SUPERIOR LARYNGEAL NERVE.

By Dr. J. DUNDAS GRANT.

The patient, a young woman, when seen on May 24 complained of such intense pain in swallowing during the preceding week as to prevent her from taking any nourishment except in the form of thin liquids.

She had had signs of tuberculosis of the lungs for two years. When first seen by the exhibitor on April 5, 1910, she complained of hoarseness and some degree of sore throat; there was infiltration of the left ventricular band, on which was an irregular tuberculous outgrowth; both the vocal cords were infiltrated, and there was a serrated thickening in the inter-arytænoid space. She was ordered auto-inhalation of anæsthesin and orthoform by means of Leduc's tube, but this did not prevent the extreme pain complained of during the week preceding May 24. On that date the infiltration of the left ary-epiglottic fold was accompanied by superficial ulceration. One cubic centimetre of 80 per cent. alcohol, containing a trace of eucaine, was injected into the region of the superior laryngeal nerve between the hyoid bone and the upper margin of the thyroid cartilage by means of Schloesser's syringe. The needle was somewhat coarse in structure, and sharpened to a much more obtuse angle than in ordinary hypodermic syringes, so as to render it incapable of puncturing the superior laryngeal artery, and it had a mark to indicate the depth of $1\frac{1}{2}$ cm. On the night of the injection her swallowing was already easier, and when seen three days later she stated that she could swallow quite well and thought her voice was rather better. The exhibitor had obtained an equally satisfactory result in the case of a female patient in the wards of Brompton Hospital.

MR. MARK HOVELL had found that firm pressure by the flat of the hands applied to the ears during swallowing relieved the pain of sore throat.

DRS. MILLIGAN and JOBSON HORNE had found Mr. Hovell's method to be very useful.

DR. DONELAN remarked that Schloesser's syringe was the same as one he had invented some years ago.

MR. HOWARTH asked how the President had found the position of the nerve.

MR. CLAYTON FOX asked how long the anæsthesia was likely to last, and whether division of the nerve would not have been better.

THE PRESIDENT, in reply, said the point about the syringe was the stumpy end; it was bevelled off at a more obtuse angle than usual in hypodermic syringes, so as to diminish the risk of puncturing the laryngeal artery. He had been much indebted for the information given by Mr. Hovell, and had used it constantly in acute inflammation, chiefly of the tonsils, but he did not think it applicable to prolonged conditions like tuberculosis. In answer to Dr. Howarth one had first to decide on which side to inject. In this case it was the left side which was most painful. The patient was lying on the right side and one could push up the larynx. The nerve was between the hyoid bone and the upper margin of the thyroid cartilage. He could produce pain by pressing on a particular spot, which no doubt corresponded to the site where the superior laryngeal nerve penetrated the thyro-hyoid membrane. He introduced

the needle and felt about until it touched a spot which sent a pain shooting up to the ear. Then he injected gradually 80 per cent. of spirit. He had not been tempted to do the excision of the nerve mentioned by Mr. Clayton Fox, as it was much more serious than injection. The duration of relief varied, but sometimes it was weeks or months. The present patient was injected only twelve days ago, but he had a patient in Brompton Hospital who was injected a month ago, and the relief still lasted. That was borne out by the results in the treatment of trigeminal neuralgia.

CASE OF PROBABLE LATE SECONDARY SPECIFIC PHARYNGITIS, WITH
NERVE SYMPTOMS.

BY DR. DUNDAS GRANT.

The patient, a woman, aged twenty-four, complained of difficulty in getting her words out and occasional loss of voice, which had been most marked within the last two or three months. She had had some soreness of the throat for the last nine months. In the pharynx were found symmetrical vertical red splashes on the pillars of the fauces, at the upper edge of which were slightly marked opalescent elevations, especially on the right side. There was slight enlargement of the posterior cervical glands, which she stated to have been previously more considerable. There was ptosis of the right eyelid, with occasional diplopia on looking up. Liquids sometimes regurgitated through the nose. The palate was paretic. The *Spirochata pallida* had not been found in a scraping from the throat, but Wassermann's test was positive, confirming the opinion that the condition was a late secondary specific involvement of the levator branch of the right third nerve, also of the motor nerves to the palate. There was no history suggestive of diphtheria to be elicited, and the knee-jerks were active.

Mr. FITZGERALD POWELL supposed that the case was one of secondary syphilis affecting the nerve endings. He had recently seen a case in which there were symptoms of acute bulbar paralysis which ended fatally.

Mr. WHITEHEAD thought this a case of peripheral neuritis due to syphilis, and Mr. Powell's one of syphilitic meningitis.

Dr. DONELAN asked whether the symptoms were not explicable on the assumption of pressure upon the cervical sympathetic by a deep gland which had become enlarged.

The PRESIDENT, in reply, said he did not think any brain centre would produce the combination of symptoms. Such a paralysis of the palate was more usual in a toxic lesion like diphtheria where there was local neuritis. Wassermann's test was positive. He had seen ptosis characteristic of cervical sympathetic mischief, but it was not so extreme as in this case, and was accompanied by a drawing up of the eyebrows and increased sweating. He believed this was an isolated involvement of the

branch of the third nerve, coincident with some lesion of the pharyngeal branches of the vagus supplying the soft palate.

HYPERTROPHY OF THE LINGUAL TONSIL, WITH IMPAIRMENT OF
SINGING VOICE, IMPROVED BY A SNARING OPERATION.

BY DR. DUNDAS GRANT.

The patient, a young woman, complained of tickling cough, which occurred soon after beginning to sing. The larynx presented a slight degree of catarrh and imperfect apposition of the vocal cords (paresis of the internal tensors). There was very marked hypertrophy of the right half of the lingual tonsil, overhanging and obviously touching the epiglottis. A portion of this was removed with the snare, and the patient, when seen four days later, stated that the cough had been very considerably diminished and her singing greatly facilitated. The exhibitor had notes of a case of a lady student of singing in whom the removal of a portion of the hypertrophied lingual tonsil was followed by greatly increased facility in singing and the immediate addition of several notes to the upper part of her compass.

Mr. CLAYTON FOX remarked that the lingual tonsil was still large, and that it must, therefore, have originally been much larger.

Mr. SCANES SPICER had found considerable difficulty in snaring the lingual tonsil, and much preferred Brady's guillotine.

Mr. WM. HILL had seen great reaction follow guillotining of the lingual tonsil, and was consequently very shy of this operation.

Dr. HORSFORD asked whether the galvano-cautery plunged into the tonsil mass was not usually sufficient for these cases.

The PRESIDENT, in reply, said that he had not been so successful with the guillotine as with the cold snare. It was difficult to engage the lingual tonsil in the guillotine, and he had a snare with a special curve for the purpose. It was not necessary to remove the whole, but only the portion pressing on the epiglottis. In answer to Dr. Horsford, he said Sir Felix Semon reported an experience of the occurrence of phlegmonous inflammation after cauterising that region, though he, Dr. Grant, believed the case to have been a most exceptional experience.

EPITHELIOMA OF THE RIGHT VOCAL CORD IN A MAN, AGED SIXTY,
SEVEN MONTHS AFTER OPERATION; NO RECURRENCE; DEVELOPMENT
OF CICATRICIAL SUBSTITUTE FOR VOCAL CORD.

BY DR. DUNDAS GRANT.

The patient had been shown in November, 1909. There was subsequent development of a reddish granulation tumour at the anterior commissure. This was completely removed by the

galvano-cautery and the subsequent application of chloride of zinc, being simply granulation and not new growth.

TUBERCULOUS ULCERATION OF EPIGLOTTIS APPARENTLY HEALED BY
FREQUENT USE OF ELECTRO-CAUTERY.

BY DR. JAMES DONEGAN.

(Shown at meeting of March, 1909.)

A SERIES OF SPECIMENS AND CASES ILLUSTRATING DISEASES OF THE
VENTRICLE OF THE LARYNX.

BY DR. JOHNSON HORNE.

Some twelve years ago and subsequently the exhibitor had reported cases and pathological investigations drawing attention to the ventricle of the larynx as a site of infection (tuberculosis, diphtheria) which might be overlooked, and he had also shown specimens illustrating innocent and malignant tumours of the ventricle. In the earlier part of the session, in the discussion of a case exhibited as possibly one of prolapse of the lining membrane of the ventricle, he had remarked that that condition was in his experience an extremely rare one, and that the appearances simulating it were due to a neoplasm. Owing to the distension of the ventricular band, the matting of the parts together, and the obliteration of the landmarks, it was not always easy, from the image in the mirror, to decide at a glance whether in the living subject the appearances presented were to be attributed to a prolapse of the mucous membrane lining the ventricle, or to a tumour, cystic or solid, presenting itself at the mouth of the ventricle. The appearances presented were more readily studied in macroscopic and microscopic sections, and therefore he exhibited again specimens and preparations which were exhibited many years ago. The following specimens were shown :

(1) A series of microscopic sections cut vertically through the entire length of one side of the soft parts of the larynx, illustrating the development of an innocent neoplasm, dependent from the roof and tending to present itself at the mouth of the ventricle. This specimen was accidentally met with whilst investigating a series of larynges obtained in the Pathological Institute of Berlin by Professor Virchow, and was given by Professor Kanthack, for the purpose of further investigating pachydermia laryngis.

(2) A section of the right half of the larynx, showing true

prolapse of the mucous membrane lining the ventricle. The detachment of the membrane had been brought about by ulceration and destruction of the cartilage secondary to a gumma. This specimen illustrated that prolapse of the ventricle, although speaking generally was more a "tradition," was at times actually an entity.

CASE 1.—The patient, a woman, aged forty-eight, had suffered from hoarseness for many years—in fact, according to her own statement, since childhood. She was a street seller of fruit and flowers, and attributed her hoarseness, and probably quite correctly, to that trade. The larynx presented swelling and distension of the right ventricular band, and when first examined the appearances suggested a projecting body from the right ventricle obscuring a view of the vocal cord in its entire length. Both cords moved equally. He wished to learn the impression created in the minds of others by an examination of the larynx.

CASE 2.—This patient, a woman of some three-score years and more, had been brought before the notice of the Section on previous occasions. When first seen some two years ago the larynx presented a growth of a papillomatous appearance at the mouth of the ventricle. Portions of this were removed, and there was not sufficient histological evidence to justify a diagnosis of malignant disease. However, one kept in mind the possibility of it subsequently presenting evidences of malignant disease, but, in view of the age and of the health of the patient, it was deemed advisable to give her the benefit of the doubt.

MR. SCANES SPICER expressed the indebtedness of the Section to Dr. Jobson Horne for the specimens, which he held supported his own views that neoplasms in general arose in situations subjected to abnormal attrition, particularly where hard structures impinged upon soft, as in the case of the vocal processes. This also held good with reference to the incidence of tuberculosis of the larynx. With regard to Case 1 the growth seemed actually to be situated in the ventricle. As the patient got older it would probably become malignant.

THE PRESIDENT said it would be interesting to hear opinions as to the laryngoscopic appearances where the growth was situated. He believed it came from above the vocal cord, but he could not see the vocal cord at all, though he tried, by inspiratory phonation, to bring it into view. If the vocal cord was present, inspiratory phonation usually brought it into view by causing recession of the ventricular bands. Possibly it grew from the interior of the ventricle. He believed the ventricle was a very favourite seat for tubercle bacilli, and often in cases of catarrh of the larynx, where inspissated mucus came between the vocal cords, interfering with the voice, the mucus was secreted in the ventricles, and there was probably catarrhal disease inside the ventricles more often than could be clinically decided.

Dr. JOHNSON HORNE, in reply, found it difficult to agree with Mr. Scanes Spicer. The vocal processes were not specially prone to tuberculosis. The ventricle was, however, because the sputum found its way into the ventricle, where it set up catarrhal changes, the swelling consequent upon which led to a closure of the orifice and the retention in the cavity of the infective material.

RAPIDLY GROWING TUMOUR OF POST-NASAL SPACE, PUSHING SOFT PALATE BEFORE IT, IN A MAN AGED FORTY-TWO (MICROSCOPIC SPECIMEN).

By DR. FITZGERALD POWELL.

Mr. CLAYTON FOX said that the swelling was chiefly located in the palate. He thought it was inflammatory in its nature and possibly due to a tonsillolith.

Dr. H. PEGLER said the microscopical appearances were those of lymphoid tissue.

Dr. WATSON WILLIAMS thought that the lateral wall of the nasopharynx, in addition to the palate, was infiltrated.

Dr. MILLIGAN had seen no swelling of the lateral wall of the pharynx.

Dr. DAN MCKENZIE agreed with Dr. Watson Williams, and remarked that the hummocky outline of the swelling here was suspicious of a new growth, perhaps a sarcoma.

The PRESIDENT asked what data were obtained by palpation; could Dr. Powell make out that the growth was behind the palate and not inside it? Also from what part of the growth was the specimen taken? There seemed to be some breaking down in the growth; but the great rapidity, as stated, appeared to be incompatible with the development of a tumour, and more suggestive of an inflammatory or specific lesion.

Mr. FITZGERALD POWELL, in reply, detailed the history of the case. Six weeks ago the patient had had influenza, and a fortnight later felt a lump in the throat. The speaker had incised and punctured the swelling, but had not found pus. It was hard and elastic to the touch. While palpating the nasopharynx, the lateral wall of which was infiltrated, he had broken off a piece of the swelling, and this had been submitted to a pathologist, who had suggested the diagnosis of sarcoma. There was no history of syphilis, but he had prescribed twenty grains of pot. iodid. three times a day. The growth looked cleaner than it did at first, but it was not any smaller.

CASE OF BILATERAL ABDUCTOR PARALYSIS FROM CENTRAL NERVE DISEASE.

By DR. DAN MCKENZIE.

A male, aged about fifty-six. The larynx presented the picture of bilateral abductor paralysis, with incipient paralysis of the internal tensors. The cords were approximated when at rest, but they did not come fully into contact during attempts at phonation.

He had frequently suffered from dyspnoea during the last two years, and had run the gauntlet of several attacks of acute glottic spasms; but, although fully aware of the risk he was running, he had steadfastly refused to submit to tracheotomy. He belonged to a family of hæmophilics. There was also at times some difficulty in swallowing liquids; the mobility of the tongue was impaired, and articulation was affected to some extent. The pupils were unequal, and responded little, or not at all, to light. The knee-jerks were active, and there was no Rombergism. The symptoms therefore pointed to a lesion in the bulb. For some time, also, he had been annoyed by a lack of control over his emotions; he laughed or wept for quite trifling reasons. There was no lietic history. The Wassermann reaction was negative. He had been taking pot. iodid, and more recently mercury.

Mr. CLAYTON FOX remarked that there was paresis of the orbicularis oris and of the tongue. It seemed to be a case of early bulbar paralysis.

CASE OF "OBSTRUCTION OF BOTH NOSTRILS."

By DR. ANDREW WYLIE.

Girl, aged eleven, said to have had the obstruction all her life. The tonsils and adenoids were removed twelve months ago; her mother stated that no operation had ever been performed upon the nose. Marks of hereditary specific disease were seen; the Hutchinson teeth were characteristic. The hearing was normal. The septum was thickened, and the anterior ends of both inferior turbinals were firmly adherent to it except at the lower border on the left side, where a fine probe could be passed. The obstruction was chiefly anterior, as posterior rhinoscopy showed a normal condition.

The exhibitor intended to remove both anterior ends of the turbinals, dissecting them from the septum, and for several weeks afterwards keeping the passages patent by means of large drainage-tubes.

The PRESIDENT said much of the obstruction in the left nostril was due to the septum, which had got away from the middle line. The patient was apparently the subject of the syphilitic dyscrasia.

Dr. JOHNSON HORNE asked whether any anti-syphilitic treatment had been tried, and if so, what had been its nature.

Mr. ATWOOD THORNE said that although there had been no operation on the nose the lesion might be traumatic.

Dr. PEGLER thought that Dr. Wylie's suggested treatment was admirable.

Mr. WESTMACOTT suggested that the adhesions might have been due to syphilitic ulceration of the nose.

Dr. WYLIE agreed that the case might be traumatic, but the mother had declared that the obstruction was noticed when the child was only a few months old.

LOSS OF VOICE WITH DYSPNŒA IN A WOMAN, AGED TWENTY-SIX.

BY MR. W. STUART-LOW.

The patient had been sent to the clinic in April last for loss of voice, which had been gradually developing for six months, and dyspnœa (especially on exertion) also increasing. The face showed a condition which had reached its present proportions in three years, having commenced as a small, raised spot on the side of the nose. The pharynx and palate exhibited scars, and the entrance to the larynx was reduced to the size of a pencil. The epiglottis was scar-bound laterally and anteriorly, the arytenoid apices being dragged forward and the ventricular bands shortened and approximated. There is no history of syphilis or phthisis, and Wassermann's test, as reported upon by Dr. Wyatt Wingrave, did not support the theory of specific infection.

Even with rest in bed the inspiratory dyspnœa became so severe three weeks ago that a low tracheotomy had to be performed. She had greatly improved since, some œdema of the larynx having disappeared, and her general health was much better. She was now being treated with Donovan solution.

The PRESIDENT regarded it as a severe case of lupus.

Dr. WM. HILL remarked that it was curious how there might be great contraction of the glottis with but little interference with breathing. He supposed that this was owing to the immobility of the cords and the absence of spasm. He advised leaving this case alone.

Dr. JOHNSON HORNE thought that the laryngeal appearances resembled those seen in congenital laryngismus stridulus. He advised potassium iodide.

Mr. STUART-LOW, in reply, said he had never seen the cords. He thought the condition due to a blending of syphilis and lupus. She had been given iodide, but it had induced some œdema.

SYPHILITIC ULCERS OF PALATE, GUMS, AND UPPER LIP.

BY MR. LAWRENCE.

The patient was a woman, aged forty-four.

CONGENITAL ABSENCE OF THE BONY PALATE.

BY MR. LAWRENCE.

A girl aged sixteen. The case looked like one of cleft palate which had been operated on.

The PRESIDENT said it was interesting in connection with the important article in this month's JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, showing how often there was a defect in the bony palate without necessarily loss of mucous membrane.

RELIEF OF DYSPHAGIA FROM TUBERCULOSIS BY VENOUS CONGESTION.

BY MR. WALTER HOWARTH.

An elastic band round the neck, with a pad over the trachea, had been worn.

The PRESIDENT said he had tried it without producing the beneficial effect he anticipated, but his friend Prof. Jurasz recommended it strongly, and he, Dr. Grant, would certainly give it a further trial.

Mr. HOWARTH had adopted this plan after he had tried the alcohol injections, because he had failed to find the nerve.

EPITHELIOMA OF THE VOCAL CORD IN A MAN, AGED TWENTY-SEVEN.

BY DR. WM. HILL.

The exhibitor asked for opinions as to whether partial or complete laryngectomy was advisable.

The PRESIDENT recommended either leaving the case alone or performing complete laryngectomy.

CASE OF EPITHELIOMA OF THE ŒSOPHAGUS, WITH SKIAGRAM.

BY DR. WM. HILL.

The skigram showed a dilatation of the Œsophagus almost as large as a cricket ball.

A CASE OF FUNCTIONAL LARYNGEAL DISEASE.

BY DR. PEGLER.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL
SECTION.*Saturday, May 7, 1910.*DR. EDWARD LAW, *President, in the Chair.**Abstract Report by Dr. DAN McKENZIE.*

Discussion on Dr. Wingrave's paper, see p. 339.

The PRESIDENT expressed, on behalf of the Section, his indebtedness to the author of the paper, and his appreciation of the value of his work.

Dr. DUNDAS GRANT asked whether the author did not think that variety No. 2 was an earlier stage of No. 1; that it was only in course of time that the epithelial layer on the surface of the granulations developed and extended sufficiently to line the whole cavity. He thought that was probably the course of events; and if sections could be made of cases which had lasted some time it would be found to be so. Dr. Wingrave's suggestions concerning the development of cholesteatoma were at all events very ingenious, and probably all the factors he had mentioned took a share in the production. Most would agree that there was also an extension of epithelium from the external surface of the tympanic membrane into the granular surface of the diseased cavity, similar to what took place under analogous circumstances in other parts of the body.

Dr. MILLIGAN considered Dr. Wingrave's work to be of a high order. He, himself, also held that the travelling inward of epithelium from the meatus had been very much over-estimated. First of all, this ingrowing was very rarely seen; secondly, cholesteatoma not infrequently occurred with a perforation situated away from the margin of the membrane. Wingrave's theory, therefore, deserved consideration. In support of it was the fact that exactly the same kind of metaplasia of epithelium took place elsewhere, and in the case of the ear all the factors were present which elsewhere induced this metaplasia. A sharp line should be drawn between cholesteatoma due to fetal inclusion and the pathological cholesteatoma. He agreed with Dr. Wingrave's distinction between sterile and non-sterile, between quiescent and active cholesteatoma, and the distinction, which had an important bearing upon treatment, could be made by a cytological examination of the discharges or washings. If the cells showed nuclei, then the disease was active and operation should be resorted to; if, on the other hand, the cells were non-nucleated, then simple treatment would be sufficient. Unlike Dr. Dundas Grant, Dr. Hartmann, and other authorities, he held that the capsule was a product of disease and should not be retained.

Dr. URBAN PRITCHARD remarked that the cholesteatomatous process closely resembled that of the more active forms of desquamation of the external meatus, and he was inclined, therefore, to hold to the older theory of its production.

Mr. SYDNEY SCOTT said that Dr. Wingrave's work would lead to a

reconsideration of the views upon cholesteatoma. His theory was worthy of support in that it explained the presence of cholesteatoma when it occurred at some distance from the external meatus. The cells when shed were not easily removed because the aperture by which they could escape was too narrow. The theory would also modify the views on the treatment of the disease.

Mr. WEST also agreed with the new theory, and likened the metaplasia of the tympanic epithelium to that which took place on the surface of an aural polypus. There was one feature in antral cholesteatoma which was difficult to account for. This was that while the bulk of the cholesteatoma was lodged in the antrum, only a narrow tract of cholesteatoma, like a tongue, connected it with the tympanum. Regarding Dr. Milligan's views upon the presence or absence of a nucleus as indicative of an active or quiescent cholesteatoma, was it not the case that the presence of the nucleus simply depended upon the age of the cell? The older the cell the less marked was the nucleus.

Dr. DAN MCKENZIE, referring to the view that the absorption of bone by the cholesteatomatous process was generally referred to the result of the mechanical pressure of the whole mass, observed that the irregular absorption, seen in the small isolated shallow depressions, found under the cholesteatomatous membrane, did not support this view. He thought that the so-called "ingrowing" of epidermis about a perforation of the membrane was apparent only, and was due to the fact that the cells nearest the opening were the first to suffer desiccation and to undergo transformation. It had been stated that cholesteatoma was more common with marginal perforations, but this could also be explained by Dr. Wingrave's theory, because marginal perforations were larger than those situated near the centre of the membrane, and so admitted air more freely. In like manner, attic perforations readily led to cholesteatoma because of their proximity to the cells covering the ossicles.

Dr. WYATT WINGRAVE, in reply, said that the theory which accounted for cholesteatoma, by a creeping in of the meatal epidermis, was fascinating in its simplicity. But he thought that the entrance of air was the prime factor. Primary cholesteatoma was due to a transformation of epithelium in the cavity. He often found cholesteatomata devoid of any kind of infection.

Cases and specimens were shown:

A CASE OF TEMPORO-SPHENOIDAL ABSCESS IN WHICH VOMITING WAS
ENTIRELY ABSENT.

BY MR. A. L. WHITEHEAD.

A. G—, aged nineteen, occasional intermittent bilateral discharge from childhood, more profuse during the last few weeks on the left side. For about a week had had severe headache on the left side of the occiput; no vomiting; no rigors; no vertigo; no constipation.

On admission: right—anterior perforation on membrana tympani with trace of discharge on canal; left—considerable amount

of pus; tympanic membrane could not be seen owing to swelling of the upper and posterior walls. No inco-ordination or paralyses of limbs; knee-jerks present and equal; no vertigo; no nystagmus. Pupils equal and react; no optic neuritis. Looked ill; answered questions intelligently, but rather slowly. Temperature 101.4° F., pulse 68, respirations 26. Radical mastoid operation performed on the left side the same day. Very extensive disease was present in the antrum and mastoid process extending back to the lateral sinus, the surface of which was healthy. The removal of the carious tegmen exposed an extra-dural abscess above, the dura mater over a considerable area being covered with granulations. Great relief followed this operation; the headache entirely passed off, and he expressed himself as feeling perfectly well, the only unfavourable sign being some irregular elevation of temperature, the pulse-rate remaining about normal.

On the fifth day after operation he did not seem so well, was rather restless, and complained of occipital headache; on the evening of that day slight difficulty in naming objects was first noticed. On the following day this difficulty was more evident, although the patient's general intelligence was quite acute and his replies brisk; the apathy noticed before the former operation had quite disappeared. The exposed dura mater over the temporo-sphenoidal lobe was incised, and a large quantity of extremely offensive pus evacuated, the organisms proving to be an almost pure culture of *Bacillus coli communis*. The abscess cavity was so large that the walls could not be reached by the tip of the little finger introduced through the opening in the dura mater.

Large quantities of necrosed brain-tissue and pus were discharged for nearly three weeks after the operation, after which the cavity began to close up. The amnesia had quite passed off by the fifth day after the operation, and the subsequent recovery was uneventful.

The interesting features of this case are the entire absence of vomiting, the occipital site of the headache, the abscess being in the temporo-sphenoidal region, and the relation between the pulse and temperature after the first operation.

Dr. MILLIGAN had recently had a run of nine brain abscesses in three and a half months, six temporo-sphenoidal and three cerebellar, and in one of these, a temporo-sphenoidal case, there was no history of vomiting. He asked whether Mr. Whitehead could say whether the abscess was cortical or subcortical, or mixed, because it was more usual, he thought, to find vomiting when it was cortical, probably because the cortex contained more blood-vessels and because the tension was greater in cortical

abscess, the symptoms as a whole being more acute. The same held good when the main activity was centred round the stalk of the abscess rather than when the chief lesion lay in the white substance.

Mr. WHITEHEAD, in reply, said that the abscess had obviously been chiefly cortical since there was no outer cortex remaining. The abscess cavity was the largest he had ever seen. Since this case he had seen another in which also vomiting was entirely absent.

HYSTERICAL DEAFNESS WITH ACTIVE VESTIBULAR REACTIONS.

BY DR. P. H. ABERCROMBIE AND DR. DAN MCKENZIE.

At a former meeting of this Section one of us (D. M.) expressed the anticipation that the vestibular tests might, in some cases, prove to be of value in the diagnosis between hysterical and organic deafness. But no case actually bearing out this anticipation had been forthcoming until now. In other cases of apparent functional deafness examined and tested, those belonging to the neurasthenic class showed a marked shortening of the induction period of the caloric reaction, while in those suffering from what seemed to be hysterical deafness, the reaction to the vestibular tests was found to be impaired in harmony with the amount of deafness present, thus following the usual rule.

The case now being reported was that of a girl, aged sixteen. The diagnosis of hysteria, leaving on one side for the moment the activity of the vestibular reactions, rests upon the following facts: The onset of deafness was preceded by an attack of transitory aphonia; there was complete loss of hearing, by aërial and bone-conduction, to all tuning-forks and to Galton's whistle, and yet the patient could hear the conversational voice about 3 in. or 4 in. from the ear; the degree of deafness varied considerably from time to time. There was diminished sensibility on the left side of the face and body.

The following were the results of testing the vestibular system:

Caloric (cold water, 22° to 24° C., the period of induction being measured in seconds): Right—nystagmus in twenty-five seconds, vertigo; left—nystagmus in twenty seconds, vertigo. Rotation: To right, normal nystagmus and vertigo; to left, normal nystagmus and vertigo.

In health the induction-period of caloric nystagmus, estimated according to the above method, is from twenty to forty seconds, the average running about twenty-eight seconds; consequently in this case the vestibular reactions were fully up to the normal. This result was of special interest, since in high grades of deafness

from organic disease the vestibular response is impaired pretty much in proportion to the amount of loss of hearing. Thus a normal or excessive response to the vestibular tests in cases of severe deafness, especially of long standing, may be regarded as highly suggestive of hysteria.

The PRESIDENT said that the case seemed to show that the vestibular tests might be of value in diagnosing hysterical deafness. In this case, however, the other stigmata of hysteria present left no doubt as to the character of the deafness. In mono-symptomatic cases the test, if it proved to be positive, would be more serviceable, for these were cases in which diagnosis was most difficult.

Mr. SYDNEY SCOTT asked whether the case had improved recently, and what the prognosis was.

Dr. DAN MCKENZIE, in reply, agreed with the President regarding the results in this case. He had shown it, however, because the diagnosis of hysteria was undoubted, in order to demonstrate the presence of positive vestibular reactions in hysteria. Whether they would be found to be positive in mono-symptomatic cases was not yet certain. The result would, of course, depend upon the situation of the nerve-block. In reply to Mr. Scott, he thought the prognosis was good in this case, taking into account the youth and sex of the patient.

DEFORMITY OF BOTH PINNÆ, RESULTING FROM PERICHONDritis FOLLOWING DOUBLE MASTOID OPERATION.

By Dr. H. J. DAVIS.

C. B—, aged twenty-five, was admitted into the hospital four months ago for severe vertigo and double otorrhœa of twenty years' duration. He was so ill that he could hardly speak, and he was dull, sick, and very giddy. Double radical mastoid forthwith with immediate improvement of symptoms. Three weeks later, when up and about the ward, the right pinna become œdematous, and this was followed five days later by a similar condition on the other side. In spite of careful treatment, both auricles continued to swell till they reached an enormous size, and their protrusion from each side of the head gave the patient a ludicrous appearance (he was familiarly known among the other inmates of the ward as "The African Elephant"). Suppuration set in, the pinnæ were incised, and tubes and gauze drains inserted in all directions. This was done five times under general anaesthesia before resolution set in. He had just returned, after a four weeks' stay in a convalescent home, in the present condition: The auricles were inverted, puckered, and shrivelled up to the size of a baby's; no necrosis of the cartilage occurred, though the segment was stripped from the cartilage and bathed in pus. The upper half only of the pinna

was affected, and the affection was symmetrical; this was due to the fact that the cartilage of the pinna consists of a single piece.

It was suggested that a gold wire, suitably curved, subcutaneously inserted in the outer rim of the helix, would rectify the deformity and improve the appearance. Opinions of members of the Section were invited with this object in view.

Dr. MILLIGAN asked what bacteria had been found in the pus. He himself had observed in another case the *Bacillus pyocyaneus* to be the organism present, and this seemed to be the general experience. He thought that the rarity of this complication was marvellous. He asked whether in cutting the flaps the concha had been freely incised, because it had been stated that this increased the tendency to septic perichondritis.

Mr. WEST agreed with Dr. Milligan regarding the guilt of the *Bacillus pyocyaneus*. He had seen one similar case where the cartilage had not been freely incised, although it had been sutured. Necrosis took place. There was no mention of necrosis in this case.

Mr. HUNTER TOD had seen two cases, one after a mastoid in which the cartilage had been incised, and one after curetting a furuncle of the meatus.

Dr. DUNDAS GRANT said that experiments with regard to the *pyocyaneus* had been made by Lermoyez, of Paris; and that investigator showed at the Congress some rabbits in which perichondritis had been induced by inoculation with *pyocyaneus*. He also said that an absolute cure for the destructive agent was afforded by dressing with the salts of silver. He, Dr. Grant, had seen perichondritis on two occasions, and it was difficult to say what was the reason for it taking place in those persons rather than in others in whom similar conditions obtained. He thought the structure of the cartilage varied in different people. In very old people the cartilage was in nodules, separated by fibrous tissue; and the cases in which perichondritis had occurred were probably those in which the cartilage was but sparsely supplied, approximating to the condition normal in old age.

Dr. DAVIS replied that the organism in this case, also, was the *Bacillus pyocyaneus*. The cartilage had not been freely incised, but a suture had been passed through one side of it. As to the cause of the attack he was ignorant. He thought that the cartilage must have necrosed *in situ*.

EXOSTOSIS OF RIGHT EXTERNAL MEATUS IN A BOY, AGED TEN.

BY MR. HUNTER TOD.

The growth was pedunculated, and arose from the floor of the auditory canal. Its surface was ulcerated, and there was much purulent secretion. The tympanic membrane could be partially seen, and was intact. The hearing was normal. There was a history of a polypus having been removed from the ear two years ago, when the discharge temporarily ceased. The treatment proposed was removal with a gouge.

Mr. WEST asked upon what data did the conclusion rest that the membrane was intact. He had had a similar case, and the growth snapped off readily when operated on.

Mr. WHITEHEAD said that pedunculated exostoses were easily dealt with. Broad-based cases were, however, more difficult, and the operation usually resolved itself into a carving-out of a new meatus. Whether the drill or gouge should be used in such cases was a nice point.

Prof. URBAN PRITCHARD had found a stump dental forceps useful in removing the pedunculated variety. There was an extraordinary variation in the occurrence of meatal exostoses. They were commoner in the south than in the north, and in private cases than in hospital cases. He ascribed this to the influence of the morning tub.

Dr. MILLIGAN asked whether these were not hyperostoses rather than exostoses. They were certainly rare in the north, although people frequently used the bath there and they very rarely indeed came to operation.

Mr. CHEATLE, in 1000 *post-mortems*, had only seen one exostosis and one hyperostosis.

Prof. URBAN PRITCHARD said that single exostoses were different from multiple exostoses. In the former, the outside was soft and not tender; the ossifying process was eccentric. The latter were hard, ivory-like and tender, but when the epidermis was removed they were quite insensitive.

The PRESIDENT agreed with the last speaker regarding the irregular occurrence of exostoses. One fact was of great importance: operation was seldom necessary. Many cases were due to water being poured into the ear in the morning bath, and if this was stopped their growth ceased.

Dr. DAN MCKENZIE said that Dr. George Jackson, of Plymouth, had shown in a statistical paper, read at the British Medical Association meeting at Sheffield, that the cause of exostoses seemed to be associated with sea-bathing. Regarding the rate of the growth he had recently seen a case in which this point was raised, and would be glad of information.

Mr. WESTMACOTT had seen three cases only, all in private. All had complained of deafness due to blocking of the narrowed meatus with cerumen. He had refused to operate.

Mr. WEST held that operation was only necessary if the meatus was blocked, especially if the growth was pedunculated.

Mr. HUNTER TOD, in reply, said that there was no perforation sound on Politzerising. He had seen three pedunculated cases in hospital patients, in whom the operation was easy. One in private, upon which he had operated, proved to be very difficult. The auricle was displaced forward and the membrane was injured in removing the growth, but the hearing was recovered. He had seen many cases in old, gouty men, and in people with chronic middle-ear deafness.

A CASE IN WHICH THE CLINICAL SYMPTOMS SIMULATED A CEREBELLAR
ABSCESS; BRAIN EXPLORED ON TWO OCCASIONS; NO ABSCESS
DISCOVERED; RECOVERY.

By MR. HUNTER TOD.

The patient, a girl, aged twenty-three, had a double mastoid operation performed in March, 1909. She was extremely deaf

before the operation, and equally so afterwards, so that she could only hear when shouted at. The right side healed well; on the left side there was some contraction of the auditory canal. During the last few months there had been attacks of giddiness, with occasional vomiting, the latter becoming more frequent lately, and there had been almost constant headache, referred chiefly to the left side, although occasionally to the frontal region. There was slight and intermittent nystagmus towards the left side. Owing to the continual complaints of headache and the increasingly ill-appearance of the patient, she was again taken into the hospital. The author thought the symptoms might be due to retention of pus, as a result of stenosis of the auditory canal. There was facial paralysis, which had existed for some long period.

On March 2, 1910, an incision was made along the post-auricular scar, and the mastoid cavity exposed. There was no appearance of disease, the cavity being lined with skin, excepting over the promontory, the surface of which seemed to be rough. The inner wall of the tympanic cavity and this region were carefully examined, and no fistula could be discovered either through the promontory itself or in the external semi-circular canal. Surgical procedure was limited to dilating the auditory canal and to making a posterior meatal flap, the wound cavity being left open and lightly packed with gauze. Twenty-four hours after the operation there was pyrexia of 102° F., accompanied by all the signs of cerebral irritation. There was marked vomiting, increased nystagmus to the left, and increased reflexes. The intellect, however, was clear. This was succeeded rapidly by symptoms of intercranial pressure, the pulse becoming reduced to 60 or less, and the temperature to 97.6° F. The patient became drowsy and lay on the affected side with the knees drawn up, and refused to answer questions.

Diagnosis of cerebellar abscess was made. Thirty-six hours after the previous operation the cerebellum was explored by the route anterior to the lateral sinus. On incising the dura mater there was obvious increase of cerebro-spinal fluid. The brain substance was incised in various directions with a negative result. The temporo-sphenoidal lobe was also explored with a similar result. The wound was then packed with gauze. Twelve hours later the patient seemed to be less drowsy and more sensible, but answered questions very slowly. The nystagmus had now diminished, and there was no further complaint of giddiness. The left arm was more flaccid, and the left hand-grip weaker than

on the right side. Romberg's rotatory phenomenon was present in the left arm and hand. There was blurring of the left optic disc, but no marked optic neuritis.

As the symptoms of intracranial pressure continued, the cerebellum and temporo-sphenoidal lobe were again explored on March 7, with a negative result. The wound kept clean and there was no hernia cerebri. The patient remained in the same state for two or three days, then gradually improved. Suddenly, a week after the last exploration, she said she felt something go "pop" in the left side of the head, and after this she could hear very much better. From this time onwards she progressed favourably, and regained her normal movements in the left hand and arm. On March 30, although apparently well, she said she was not able to read, although she was able to crochet. Previous to the operation she could read perfectly. The swelling of the optic disc gradually disappeared, and the fundi became normal.

The case was of interest in that it simulated so markedly a cerebellar abscess. A suggested explanation was that as a result of opening up the mastoid the labyrinth became infected, and as a sequela to this there was a localised accumulation of cerebro-spinal fluid in the posterior intercranial fossa, which was drained by the operative procedures. The second point requiring explanation was the distinct improvement of hearing occurring immediately after the patient's subjective sensation of something going "pop" in her head.

Dr. DAN MCKENZIE said the case reminded him of one he had seen in hospital six months before. A day or two after a radical mastoid the patient, a man, showed signs of brain abscess in dulness of intellect, slowness in answering questions, a sub-febrile temperature, and a retarded pulse. There was also marked spontaneous nystagmus to the affected side. The combination of cerebellar and cerebral signs led to hesitation in opening the skull, and next day it was found that all the symptoms had disappeared and the patient got quite well. This case, along with others, had taught him that spontaneous nystagmus, of itself, was an unreliable sign, and should never be accepted as the sole reason for exploring the brain.

SPECIMEN OF CHOLESTEATOMA OR KERATOSIS OBTURANS OF THE EXTERNAL AUDITORY CANAL.

By MR. HUNTER TOD.

The patient, a man, aged forty-eight, complained of deafness and earache, which had been made worse by syringing. Examination showed a large white mass filling up depths of the auditory

canal. There was no history of otorrhœa. Installation of hydrogen peroxide lotion, followed by prolonged syringing, failed to remove the mass. Further treatment was carried out at home, by the patient's medical man, but with a negative result. He tried in turn solutions of bicarbonate of soda and glycerine, carbolic oil and rectified spirits, together with repeated syringings. Two weeks later the patient returned and with great difficulty, by means of repeated syringing and the use of instruments, the mass shown was removed. It was removed in three portions, and, when fresh, consisted of an outer glistening layer, and when first placed in water it expanded, and its structure seemed to consist of concentric layers of tissue closely pressed together. Further examination of the ear now showed the inner portion of the auditory canal to be larger than normal, and lined with desquamating epithelium, as was also the depressed surface of the tympanic membrane. The tympanic membrane was quite intact.

The patient now heard normally, but had to be seen at intervals of six months, as there was still a tendency for re-accumulation of masses of desquamating epithelium.

TWO CASES OF CHOLESTEATOMA OF UNUSUAL SIZE EXTENDING INTO THE POSTERIOR FOSSA AND CAUSING OBLITERATION OF THE SIGMOID SINUS.

By MR. GEORGE WILKINSON.

CASE I.—J. W.—, aged forty-nine, a labourer, was admitted to the Sheffield Royal Hospital from the out-patient department on November 10, 1909. He was extremely deaf, and had to be communicated with by writing. There was offensive purulent discharge from both ears, and complete flaccid paralysis of the right side of the face. He complained of great pain in the right occipital region, and vertex on the right side of the middle line.

The history was difficult to obtain owing to the patient's deafness. He dated the beginning of his ear troubles to a fall on his head sixteen years previously. He was unconscious for about an hour after the accident. He thought there was no discharge of blood from the ears. He believed he was slightly deaf in the right ear before the accident. About three months' later he noticed that he was more deaf on the right side, and he began to have a discharge from the right ear. He did not know when the discharge from the left ear began. The face became "drawn" thirteen years ago, when he had an attack of pain in the right ear. He had had

attacks of pain from time to time, but the pain had been much worse during the last two months.

November 10, 1909.—Right ear: profuse offensive, thin, blood-stained discharge from the ear. The depth of the meatus was filled with granulations; a probe passed into the meatus entered a cavity beyond, causing pus to well up between the granulations. The right ear appeared to be absolutely deaf. A tuning-fork (C_1) struck loudly was heard for a few seconds when placed on the mastoid, probably by conduction to the opposite side. Left ear: profuse purulent discharge. The inner tympanic wall could be seen through a large perforation in the membrana tympani. He could occasionally catch a word if one shouted loudly close to the ear. Bone-conduction (C_1) was lengthened five seconds. Vestibular reaction: rotatory—right ear absent, left ear present (? twenty seconds after ten rotations in twenty seconds); caloric—right ear absent, left ear well marked; appeared after twenty-five seconds, irrigation, and lasted 115 seconds after one-minute irrigations with water at 70° F. Gait quite steady. No Romberg symptom. Jumped backwards with eyes closed without staggering afterwards.

Operation (November 11) on the right ear. Usual mastoid incision. Mastoid cortex very dense, $\frac{5}{8}$ in. thick. As soon as the cortex was penetrated by the chisel, very offensive pus welled up under pressure. Removal of the cortex exposed a large cavity filled with decomposing cholesteatoma, partly laminated, but mostly pultaceous, mixed with pus and small sequestra. The posterior wall of the osseous meatus was chiselled away, exposing the tympanic cavity. The inner tympanic wall was much eroded, and all the bone posterior to the antrum had been absorbed, leaving a large opening into the sinus groove and posterior fossa. The facial canal could not be identified. An open vertical groove on the inner wall of the aditus was probably the remains of the superior semi-circular canal. The vestibule, the facial canal, and the external semi-circular canal had apparently entirely disappeared. Posteriorly the dura mater and sigmoid sinus was pushed backwards by a mass of cholesteatoma which had invaded the posterior fossa. The resulting cavity extended in a downward, inward, and forward direction towards the base of the skull, in which direction a probe could be passed into the depth of the wound 7.5 cm. from the surface of the mastoid. The dura mater was much thickened, and the sigmoid sinus appeared to be entirely obliterated down to the jugular foramen. A large meatal flap was made, and the

mastoid wound closed. The cavity was packed with gauze through the meatal wound. The large cavity, with its rigid wall of bone and thickened dura mater, filled up very slowly. Injections of Carl Beck's bismuth wax were made into the post-aural cavity on January 11 and 25 and March 1.

He had been free from pain since about a week after the operation. The post-aural cavity was nearly obliterated, there being only a small amount of discharge daily. The hearing of the left ear had much improved under regular cleansing. It was possible to make him understand anything that is said to him by shouting.

CASE 2.—C. R——, aged eighteen, was admitted to the Sheffield Royal Hospital, December 14, 1909. Profuse discharge of somewhat offensive pus from the left ear, some headache, and complete left-sided facial paralysis. Discharge from the ear began after measles in early childhood. Thirteen years' ago she had a mastoid operation performed (not by reporter). A certain amount of discharge had continued ever since. The face began to be "drawn" eight weeks before admission, and a few days later she had some pain in the ear. The discharge had ceased, but began again a few days later, and the pain was relieved, though she had some headache.

Examination of the left ear showed the meatus to be narrowed to a mere sinus $\frac{1}{2}$ in. within the orifice. In the scar of the old mastoid wound was a small sinus discharging a little pus. There was complete paralysis of the left side of the face, but none of the soft palate or uvula.

Operation, December 15.—Mastoid exposed through the old scar. The sinus led into a large cavity, the expanded antrum and tympanum in one. There was a free opening posteriorly into the sigmoid sinus groove. The whole cavity was filled with laminated, firm cholesteatoma, and a certain amount of pus. The cavity in the mastoid was fully exposed by removal of further portions of the mastoid cortex, and the groove for the sigmoid sinus was freely opened up. The inner tympanic wall was covered with firm, organised granulation tissue, so that the details of its condition could not be made out. The deeper meatus was partially lined with skin, the desquamating epithelium from which had no doubt given rise to the cholesteatoma, its escape from the ear being cut off by the contraction of the meatus. The point at which the facial nerve was being compressed could not be made out. No opening in the facial canal could be detected.

The sigmoid sinus groove was entirely filled with cholesteatoma, and the sinus itself obliterated. The cholesteatoma was removed

by lifting it out of its bed gently with a blunt spoon. The last portion to be removed filled the lowest portion of the groove in the neighbourhood of the jugular foramen. As it was being lifted out a great gush of venous blood welled up, showing unmistakably that the sinus had been opened. The hæmorrhage was immediately controlled by plugging. All remnants of skin were everted out from the tympanum and deep part of the meatus, and the mastoid wound left open and packed, with the object of obtaining obliteration of the whole cavity. Smart hæmorrhage occurred from the sinus when the packing was removed two days later, and was again arrested by packing.

When the cavity was granulating, hearing and vestibular tests were carried out, with the following results: Left ear—mastoid, Co $\frac{7}{60}$, C₁ $\frac{7}{30}$, C₂ $\frac{3.0}{30}$, C₃ $\frac{1.2}{17}$, C₄ $\frac{3}{8}$; aerial condition, Co 0, C₁ 0, C₂ $\frac{1.2}{7.5}$, C₃ $\frac{7}{30}$, C₄ $\frac{4}{20}$. Right ear, hearing quite normal. Rotatory: Left ear, slight nystagmus for a few seconds; right ear, nystagmus for twenty seconds after seven rotations in twenty seconds. Caloric: Left ear, no nystagmus; right ear, nystagmus induced after fifteen seconds' irrigation; lasted sixty seconds after one-minute irrigations with water at 70° F. Romberg symptoms—slight swaying; sways after jumping backwards with eyes closed.

Second Operation (February 2, 1910).—No improvement having taken place in the facial paralysis, it was decided to do Alt's operation. The facial nerve was exposed at the stylo-mastoid foramen, and by chiselling away the overlying bone was traced upwards as far as the inner tympanic wall, where it merged in a mass of scar-tissue. Erosion of the inner tympanic wall had taken place at this point, destroying the nerve and probably also the vestibule. The scar-tissue was scraped away, and the exposed nerve covered with a fragment of gold leaf, over which a piece of rubber tissue was laid. It was hoped that new nerve-fibrils from the proximal end of the nerve might find their way to the exposed distal end. Up to the present no improvement in the facial paralysis had taken place. The mastoid wound had healed, and the auditory meatus was closed $\frac{1}{2}$ in. from its orifice.

MALIGNANT GROWTH OF THE RIGHT TEMPORAL BONE, WITH EXTENSION THROUGH THE EXTERNAL MEATUS RESEMBLING AN AURAL POLYPUS. (SPECIMEN SHOWN.)

By DR. P. WATSON WILLIAMS.

W. W.—, male, aged fifty-seven, was referred to the Bristol Royal Infirmary by Dr. Rattray, of Frome, with a polygoid growth

protruding from the right external auditory meatus. Its surface was black from congealed blood, an attempt having been made to snare the polypus by Dr. Rattray.

History.—The patient first noticed increasing deafness in May, 1909, and, thinking it was due to wax, tried olive-oil drops. No noticeable development occurred till August, when he began to suffer from pains in the head and giddiness, which prevented him working. In September he discovered a small, smooth swelling in the head, in October a lump over the left fifth rib, and in November a swelling on the right buttock. These swellings had increased, but had remained painless. About Christmas-time he first noticed something coming out of his right ear, which bled when he tried to scratch it away, and facial paralysis also began to develop then. On admission it was complete, with absolute deafness in the right ear. There was no history of syphilis.

Portions of the growth protruding from the external meatus were removed and submitted to Prof. Walker Hall, pathologist to the Royal Infirmary, but he was unable to report definitely as to the nature of the growths. Small fragments removed on February 28, 1910, were found to be covered with epithelium, showing no malignant change, with subdermal tissue of collections of round-cells, difficult to differentiate from sarcomatous, but "if all the polypi were removed it is most probably innocent." Later a larger mass removed was pronounced undoubtedly malignant. He was put on iodide of potassium, 40 gr. daily.

March 9: Mental condition seemed little affected, but he was weaker and losing weight. An area of dulness, with moist sounds and increased vocal resonance, developed over the base of the left lung.

Ocular conditions: Right eye—some central cataract and old diffuse chorio-retinitis; left—disc pallid, no neuritis.

A curvilinear incision through the skin was made over the right mastoid down to the bone, which was very thin, and the vascular friable growth exposed; but as it was obviously impossible to remove it, the wound was immediately closed. He became progressively weaker, and died on March 17. *Post-mortem*: Metastases in vertex of skull, kidney, etc.

SPECIMEN OF FRACTURE OF THE TEMPORAL BONE.

By MR. G. J. JENKINS.

The fracture involved the roof of the Eustachian tube and tympani cavity, and squamous temporal. Externally the fracture

extended to the under-surface of squamo-zygomatic element immediately behind the post-glenoid tubercle along the area of articulation and the tympanic plate. The middle-ear tract was filled with blood-clot. The tympanic membrane was unruptured, and there was no blood in the meatus.

INTERNATIONAL CONGRESS OF MEDICINE AT BUDAPEST.

September, 1909.

SECTION OF OTOTOLOGY (AND INTERNATIONAL CONGRESS OF OTOTOLOGY).

(Continued from p. 330.)

ACOUMETRIC METHODS WITH PROJECTIONS OF "DIAPPOSITIVES."

BY DR. GRADENIGO (Turin).

(a) Presentation of a model of the telephonic acoumeter of Prof. Stefanini, of Lucca, which allows of the measurement of the acuity of audition in relation to the normal acuity of audition, for three different notes in the scale, of 100, 500, and 2000 double vibrations.

(b) Demonstration of the new method of acoumetry by means of tuning-forks excited by weights, according to Stefanini and Gradenigo.

(c) Demonstration of a triangular design by Stefanini for the determination in millimètres of the amplitude of vibration of the low forks, according to Gradenigo's optic method of acoumetry.

(d) Demonstration of a new method for rendering visible and measuring microphonic currents by means of a beam of light.

OTOSCLEROSIS.

BY DR. T. HELMAN (Warsaw).

Otosclerosis is looked upon to-day as a result of middle-ear inflammation, as a primary lesion of the bony capsule of the labyrinth, or as a foetal and congenital process. According to many authors, the bony change consists of a rarefaction. Stapes ankylosis, and obliteration of the fenestra ovalis are the earliest changes. Any condition which alters the general nutrition may cause it, and

it is the local reaction of the organ of hearing to a general disease, as, for instance, syphilis, tuberculosis, anaemia, and so on. It is also hereditary in many cases. Perhaps the origin is occasionally local. Otosclerosis is frequently complicated by secondary labyrinthine changes. The latter are to be looked on as due to the inactivity of the nerve and epithelial elements of the membranous labyrinth.

In the examination of the hearing, Bezold's triad forms one of the most important symptoms. Prominence of the anterior fold of the drum membrane and alteration in the position of the malleus handle are aids to the diagnosis. The prognosis is relatively unfavourable. General measures alone can produce a certain, though temporary, improvement. The name otosclerosis should be abandoned, and instead the term "periostitis ossificans" or "ostitis stapedio-vestibularis" introduced.

Prof. POLITZER could not agree with the author's view that the anatomical basis of otosclerosis was ankylosis of the stapedio-vestibular articulation, since this was itself referable to a pathological change in the bone. The speaker combatted the pronouncement of the author that it could not be proved that the disease began in the labyrinth capsule. He himself had shown that the disease began in the bone of the labyrinth, and was often situated at a relatively considerable distance from the mucous membrane of the middle ear. Further, the bone changes were always more distinct in the interior of the petrous bone and less marked in the vicinity of the mucous membrane. He also discredited the opinion that the otosclerotic process was the local manifestation of some general dyscrasia, since the disease frequently affected individuals who were otherwise in perfect health. He doubted further whether the new titles proposed by the author would oust the old name "otosclerosis" from the nomenclature of diseases of the ear, especially since the term represented the general idea of the disease process.

Dr. DENKER supported Prof. Politzer's criticisms. How did the author reconcile the occurrence of isolated foci in the semi-circular canals with his theory that the disease began in the mucous membrane of the middle ear? From the present condition of pathological research on the disease he held that a primary disease of the labyrinth capsule was the most probable explanation of its occurrence. He was disinclined to think the syphilis had anything to do with otosclerosis. Syphilis was commoner in men, while otosclerosis was commoner in women. Nor could senility account for a disease which generally set in about the second or third decade of life. He also supported the retention of the term "otosclerosis."

Dr. ZITOWITSCH (St. Petersburg) feared that Dr. Heiman had misapprehended his (the speaker's) theory of otosclerosis, which he explained as follows: On the ground of a large number of manometric experiments he had come to the conclusion that in otosclerosis the tensor tympani loses its contractility. Anatomical investigations of other authors had shown that both the tensor tympani and the stapedius were now and again degenerated. Theoretically he looked upon these changes as the cause of otosclerosis. The speaker then went on to

describe his treatment of the disease by the application of the faradic current for five or six weeks at a time with intervals of two to three months.

Dr. RUTIN said that Fröschels had lately found that patients suffering from otosclerosis had a diminished sense for tickling in the ear. The symptom might prove valuable in the diagnosis of mixed cases.

Dr. HOLINGER (Chicago) said it was often forgotten that the pathological process was frequently situated elsewhere than in the neighbourhood of the oval window. In such cases there was, naturally, no sign of middle-ear deafness, but of perceptive deafness with absence of Bezold's triad. He had found phosphorus of great service in the treatment of otosclerosis.

Prof. POLITZER expressed the indebtedness of otologists to Prof. Gradenigo for his instructive communications on the aetiology of otosclerosis. There was one point, however, in which he was compelled to differ from that observer. The latter mentioned that there were families, the adult members of which manifested symptoms of sclerosis, while their children suffered from adenoids, cough, and catarrh of the middle ear. He concluded therefrom that the otosclerosis of the adults had developed from the catarrh of early life, and if no anatomical signs of the catarrh could be found in the membrana tympani and mucous membrane of the middle ear, he believed that these changes retrogressed and that the middle ear was able to become normal again. The speaker remarked that he could not agree with this conclusion. A return to the normal could certainly take place in acute otitis, with or without perforation, but in chronic catarrh the changes in the drum membrane and mucous membrane of the middle ear could never disappear; thickenings, clouding, and new formation of connective tissue in the attic and in the fenestræ invariably persisted.

Mr. CRESSWELL BABER had found considerable benefit in what seemed to be early otosclerosis from the continued application of electro-massage to the membrana tympani. He thought there was irritability of the nerves in the meatus in many cases of otosclerosis.

Dr. HEIMAN, in reply, referred to the details of his paper for a reply to many of the criticisms, and only desired to touch one point in the discussion. This was that the hardness of hearing which followed limited bone changes in the labyrinth capsule without there being any participation of the stapedio-vestibular region were difficult to explain. If, however, the disease process originated in the middle ear, especially in the neighbourhood of the oval window, then that would, at an early period, impair the movement of the stapes, and so set up deafness and other symptoms. Arthritism might be found even in robust individuals, and in the same way, namely, by changes in the general nutrition, otosclerosis might be induced.

REPORT OF THE COMMISSION FOR THE PREPARATION OF A UNIFORM
ACOUETRIC FORMULA. (See JOURNAL OF LARYNGOLOGY, RHINO-
LOGY, AND OTOTOLOGY, vol. XXIV, No. 12, p. 641.)

By JÖRGEN MÖLLER (Copenhagen).

Several members welcomed the report and agreed with the conclusions, but—

Dr. LEUTERT (Giessen) feared that the employment of formulæ, the meaning of which was not quite clear to practitioners who were not otologists, would deter these practitioners from reading otological literature.

Dr. FREY (Vienna), after some detailed criticism of the tests accepted by the Commission, expressed the opinion that the suggested signs rendered the whole matter too complicated, and induced, moreover, an impression of exactness which had no foundation in fact. The simplest plan was to write things plainly out in detail.

Prof. POLITZER recommended the acceptance of the formula in the interests of international science. Although at present they might seem to be not immediately comprehensible, yet he was sure that this was merely a matter of habit, and that when we had once begun to use them we could thus obtain a picture of the results of the hearing tests at a glance. As a member of the Commission the speaker expressed his thanks to Dr. Möller.

Dr. GRADENIGO, with reference to individual tests, to which objection had been raised, said that writers could omit or employ whatever tests they pleased. The Commission had given the preference to Schultze's monochord as compared with the Galton-Edelmann whistle, although the latter was more exact. Besides, he and Stefanini had come to the conclusion that the upper limit of normal hearing was not more than 20,000 to 22,000 V.D.

Dr. MÖLLER, in reply, said that at present each writer employed his own formulæ, and the result often was that they were incomprehensible to everybody else. The use of formulæ was therefore no novelty. All that the Commission suggested was that the formulæ should be uniform so that everyone could understand them. The answer to the criticism that non-specialists would not understand the signs was that specialists of all countries would understand them, and that, after all, was the most important matter.

ON THE CLASSIFICATION OF CHRONIC PROGRESSIVE DEAFNESS.

By JÜRGEN MÖLLER (Copenhagen).

The great group of forms of progressive deafness includes diseases of which the pathological anatomy is very different. According to the latest researches the author considers that the following maladies can be recognised :

(1) Chronic progressive deafness of catarrhal origin.

(2) Progressive deafness characterised by bony changes: (i) Otosclerosis; (ii) progressive deafness from traumatism; (iii) chronic ossifying labyrinthitis.

(3) Chronic progressive deafness due to alterations in the nervous apparatus: (i) Chronic progressive labyrinthine deafness; (ii) occupation deafness; (iii) progressive deafness due to tumours of the acoustic nerve.

In order to establish a certain diagnosis it is necessary to consider not only the antecedents of the patient and the otoscopic

image, but especially also the functional examination of the hearing power. Already the functional examination appears to give results sufficiently exact to allow a diagnosis to be made, of which the correctness is very probable. The study of these interesting diseases must, however, be continued both with regard to their functional examination and from the point of view of their pathological anatomy, in order to ascertain if the above classification can be sustained or must be replaced by another.

THE DIAGNOSIS AND PROGNOSIS OF OTOGENIC MENINGITIS.

By M. LERMOYEZ (Paris).

Otogenic meningitis occurs once in six hundred cases when the suppuration is limited to the middle ear, and in one case out of eight when the suppuration invades the internal ear. It is therefore necessary, in order to be able to make an early diagnosis of otogenic meningitis, to detect the first signs of labyrinthitis. For this purpose the only certain clinical method is the test of nystagmus provoked by rotation of the patient, or better still, by the injection of cold water into the auditory canal. Hearing tests have much less value, for the Weber, which ought to be lateralised on the sound side, is generally indifferent, and the Rinne is always negative.

The diagnosis of otogenic meningitis rests on clinical symptoms and biopsic signs. The clinical symptoms do not give any certainty, as not one of them is pathognomonic. The biopsic signs are the examination of the blood and the examination of the cerebro-spinal fluid. The examination of the blood is a proceeding of little semeiological value.

The examination of the cerebro-spinal fluid has a certain significance. Its analysis includes four parts: (1) The macroscopic examination, which gives general indications; (2) the chemical examination, too delicate to be of any clinical use; (3) the bacteriological examination, which has for an indispensable complement the study of the virulence of the microbic infection, and which furnishes very valuable information when care is taken to practise a series of cultures and inoculations; (4) the cytological examination or cyto-diagnosis, which is at present the most simple and quickest means of making not only a diagnosis but also a prognosis of otitic meningitis, provided that, in addition to a determination of the relative numbers of lymphocytes and polynuclears, it is noted if these elements are intact or degenerated. By the help of

these various laboratory data four different types of otogenic meningeal reactions, with different prognoses, and requiring different treatment, can be recognised.

Type 1.—Septic purulent meningitis, characterised by a cloudy liquid, rich in microbes and in degenerated polymorphs; generally such a case is one of diffuse otogenic meningitis, of which the prognosis is very serious, but not hopeless.

Type 2.—Pariform aseptic meningitis, in which the liquid drawn off by lumbar puncture is cloudy and characterised by the absence of microbes and the absence of degenerated polymorphs. The prognosis of this form is not very grave. It is the result of a white flux from the whole of the meninges, which is usually produced by a focus of true purulent meningitis localised around the petrous bone.

Type 3.—Serous septic meningitis, which forms another very obscure group, and which seems in reality to be nothing else than septic purulent meningitis attenuated or checked in its evolution.

Type 4.—Serous aseptic meningitis, in which the cerebro-spinal fluid is transparent and completely sterile, containing only very few leucocytes. This common form, which has also been called meningism, seems to be only a focus of meningo-encephalic toxic oedema occurring in the neighbourhood of the diseased ear, analogous to the collateral oedema which appears round an anthrax. The prognosis is very favourable.

It only remains to mention otogenic cerebro-spinal meningitis, characterised by an insignificant reaction of the middle ear and by meningeal symptoms, with the double characteristic of occurring as an epidemic and of attacking the brain and spinal cord simultaneously.

In otogenic tuberculous meningitis the diagnosis is still full of obscurity; the disease can only be suspected, and only when the cyto-diagnosis shows a pure or predominant leucocytosis.

OPERATIONS ON THE GULF OF THE JUGULAR VEIN.

BY MOURE (Bordeaux).

The author classifies the surgical measures as follows:

First, operations without opening the gulf, including drainage between the sinus and the jugular, catheterism, curettage, performed from the jugular towards the gulf, or *vice-versa*. All these procedures are done in the dark, and are therefore dangerous.

Plugging, advised by Grunnert, which consists in laying bare

the sinus as far as its horizontal limb as near as possible to the gulf, is a satisfactory method in many cases.

In the second place the author occupies himself with the mode of opening the gulf of the jugular. Under this head he describes successively the operations, which consist in reaching the foramen lacerum posterius by the trans-tympanic and trans-mastoid route.

An important consideration is the difference of opinion between anatomists and surgeons. The former regard opening the gulf as an almost impossible operation; the latter, on the contrary, indicate in a precise manner the operative technique which it is necessary to follow in order to reach the goal. The explanation of these two contrary opinions is found in the fact that the anatomists operate on the healthy cadaver, rigid and difficult to manage, whilst the surgeons are dealing with the living body, in which the tissues are infiltrated, separated, and softened, and often surrounded with pus and with the bone more or less diseased.

Dr. Moure concludes that the best mode of attacking the gulf of the jugular is by having no fixed method, but for the operator to let himself be guided by the lesion itself, which will certainly lead towards the diseased region—in fine, that the best rule is to have no rule.

(To be continued.)

Abstracts.

NOSE.

Grunwald (Münich).—*The Lymphatic Vessels of the Accessory Sinuses of the Nose.* "Arch. für Laryngol.," vol. xxiii, Part I.

Reference is made to the works of André, whose material consisted of two young subjects of the ages of five and eight years.

While, however, owing to the greater richness of the capillary network at such ages, injections are more easily carried out than in later life, they do not supply conclusive evidence as to the state of affairs in the adult. Grünwald therefore used as his material the head of a man, aged sixty, and obtained a satisfactory result on the left side by injecting the colouring material into the membrane, closing the anterior nasal fontanelle.

Both the author's preparation and those of André showed no branches of communication to the alveoli, and none passing through into the orbit. The last was especially noteworthy, in that a dehiscence of the lamina papyracea was present. The preparation demonstrated further that there is continuity of the entire lymphatic system of the accessory sinuses and of the nose in the plane of the mucous membrane, and not by vessels passing through the walls of the cavities.

Thomas Guthrie.

Darling, John M.—*Cytological Examination of the Discharge in Cases of Suppuration of the Maxillary Sinus as a Guide to Treatment.* "Edinburgh Med. Journ.," December, 1909.

Of the cases examined 29 were of more than five years' duration, 22 were of between one and five years' duration, 7 were of between six months and one year's duration, and 11 were of less than six months' duration.

The conclusions at which the author arrives are:

(1) The discharge from the maxillary sinus is a discharge from a mucous membrane showing different stages of the inflammatory process in different parts of its area. Cytology, therefore, can never be more than a partial aid in the estimation of its condition.

(2) The presence or absence of relatively large numbers of lymphocytes in the discharge does not depend on the chronicity of the disease. Epithelium is not, as a rule, to be recognised in the early stages of the disease. Epithelium found in the discharge is usually of the squamous variety.

(3) Cases in which the discharge shows a relatively small number of lymphocytes hold out a better prospect of cure by non-radical procedure than do those where relatively large numbers of lymphocytes occur.

(4) Independent of the period of duration, cases which are associated with the *Streptococcus pyogenes*, and which also show excess of lymphocytes in the discharge, are seldom cured by non-radical measures.

Arthur J. Hutchison.

PHARYNX.

Carmichael, E. Scott.—*Tuberculosis of the Tonsil, associated with Tuberculous Glands of the Neck.* "Proc. Roy. Soc. Med." (Section for Study of Disease in Children), November, 1909, p. 27.

The tonsils of a number of children suffering from enlargement of the cervical lymphatic glands were examined microscopically, but not in serial section. Out of thirty-seven cases of slight, unilateral, and limited glandular enlargement, the tonsil of the same side showed definite tuberculosis—giant-cell systems and bacilli—in two cases. Out of thirteen cases with severe and extensive glandular disease, the tonsil on the corresponding side was found tuberculous in five.

In none of these did the macroscopic appearances of the tonsil, either before or after removal, raise the suspicion of tuberculosis, nor did the shape or size of the tonsil seem to bear any special relation to the tuberculous disease.

In several of the cases, indeed, the affected tonsils were small and even atrophic, and of firm consistence.

The probability is that the tonsillar disease is primary to that of the other lymphatic glands. The author is disposed to think that in some cases the infection of the tonsils was secondary to a small focus in the lungs; in others the disease seemed to have begun in the tonsils.

Dou McKenzie.

LARYNX AND TRACHEA.

Porter, W. G.—*Cases of Laryngeal Tumour, with Remarks on the Technique of their Removal.* "Edinburgh Med. Journ.," March, 1910.

CASE I.—A man, aged thirty-three, complained of huskiness which had been continuous for six or seven months. He had been thrown from his

horse eight years before, and sustained some injury to the neck. Whether this accident had any causal relation to the laryngeal neoplasm is doubtful. A bluish tumour was seen on the anterior end of the left vocal cord, apparently growing from the ventricle. The tumour consisted of very loose connective tissue underlying the mucous membrane and containing many hæmorrhages.

Cases 2, 3 and 4, were cases of "singer's node." Case 5 was one of multiple papillomata in an adult. Case 1 the author considers probably unique, he can find no similar case recorded; Case 5 is rather rare. The main object of the article seems to be to describe his method of anæsthetising the parts preparatory for operation, a method he learned in Prof. H. Krause's klinik in Berlin. The method is as follows: The soft palate is rendered insensitve by the application of a pledget of cotton-wool dipped in a 10 per cent. solution of cocaine hydrochloride. Twenty minims of a 20 per cent solution of cocaine hydrochloride are then taken up in a very fine-pointed laryngeal syringe. Under guidance of the laryngeal mirror three or four drops of the solution are allowed to fall along the upper border of the epiglottis; a minute later the arytenoids are similarly treated. After a second pause the interior of the larynx is dealt with in the same way. After each instillation the patient should give a short cough, so that some of the cocaine may reach the posterior surface of the epiglottis and posterior wall of the pharynx. The operation may be begun a minute or two after the last instillation. The author thinks that this method is not known in this country.

Arthur J. Hutchison.

EAR.

Shambaugh, G. E. (Chicago).—*On the Significance of Certain Labyrinth Symptoms.* "Laryngoscope," September, 1909, p. 683.

Disease in the labyrinth induces symptoms either of irritation—tinnitus and vertigo, or of loss of function—deafness, etc. In acute conditions signs of irritation are the most conspicuous phenomena; in chronic conditions the predominant feature is a loss of function. A combination of both of these groups of symptoms forms the Ménière symptom-complex, and indicates involvement of both cochlear and vestibular systems. No particular disease, however, is thereby signified.

Acute processes may be definitely limited to either branch of the auditory nerve, and when the vestibular is the branch affected, the vertigo, nausea and other symptoms of disturbance are often referred by the practitioner to other organs, because, there being no deafness, the ear is not suspected.

Acute processes, whether they attack both or only one division of the auditory organ, manifest two types of onset. One is slow, taking several days or weeks to reach full development, and is characteristic of infective or toxic neuritis; the other is sudden and violent, and is due to embolism or hæmorrhage, save in the very rare event of a fulminating neuritis. Broadly speaking, a slow onset favours the diagnosis of a nerve lesion, and a rapid onset favours a lesion of the labyrinth.

Cases are related in which the sudden development of a partial localised defect in the auditory scale suggested the occurrence of an embolic occlusion of one of the small end-arteries of the cochlea.

Dan McKenzie.

Ross, George T. (Montreal).—*Case of Temporo-Sphenoidal Abscess of Otitic Origin, accompanied by Two Epidural Abscesses and One Subperiosteal Abscess.* "Montreal Med. Journ.," May, 1909.

The patient, Mrs. M——, aged twenty-seven, mother of eight children and pregnant. She was admitted to the hospital with severe mastoid symptoms, including great swelling and tenderness behind the right ear and perforation in the posterior inferior quadrant, from which pus was oozing.

In the first operation the subperiosteal abscess was opened, with discharge of pus. The mastoid cells were then opened, pus being found everywhere as far as the inner table of the skull. An area of necrotic bone was encountered in the mastoid, directly behind the external auditory canal, and in curetting this away a peri-sinus abscess was tapped, which contained two teaspoonfuls of creamy pus. The cavities were cleaned and drained and closed in the usual way. The hospital reported the case as one of staphylococcus infection. For two weeks after the operation patient's condition continued favourable, with practically a normal temperature. Then there was a rise of a degree and a half, followed by a fall again, introducing a low septic condition, with headaches, irritability, and occasional emesis. Four weeks after the first operation the patient was semi-stuporose, with external squint of right eye and enlarged pupil; left hemiplegia noticeable; deep reflexes active.

A second operation was now done, the former mastoid being re-opened. The granulations were found satisfactory, but the instrument passed through the tegmen centre into the floor of the middle cerebral fossa with hardly any resistance, a quantity of thick pus being released from an epidural abscess. A button of bone was then trephined through the squamous portion of the temporal and the dura exposed. This was opened and a trocar and cannula inserted into the temporo-sphenoidal lobe, directly inwards and downwards. On withdrawing the trocar an ounce of very fluid pus came out in a stream. The wounds were cleaned and dressed. The patient rallied well, and for forty-eight hours the result promised to be favourable. The patient replied more readily to questions, and voluntary movement of left arm and leg improved. But the third day she collapsed with a fatal issue. At the autopsy a large, empty abscess cavity was found in the right temporo-sphenoidal lobe. Its wall was very condensed and covered with detritus, while continuous with it, in the posterior portion of the island of Reil, there was red softening.

Price-Brown.

Iglauer, S.—*Method of Opening the Mastoid Antrum through the External Auditory Meatus as the First Step in the Mastoid Operation.* "Laryngoscope," January, 1910, p. 76.

The antrum is opened by means of the electric drill applied to the postero-superior wall of the external meatus. The usual post-aural incision is employed and the operation is otherwise completed along familiar lines. The anatomy of each case is ascertained by X-ray examination before the operation.

Dan McKenzie.

THE JOURNAL OF LARYNGOLOGY. RHINOLOGY. AND OTOTOLOGY.

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A CASE PRESENTING MÉNIÈRE'S SYMPTOMS ALONG WITH FACIAL PARALYSIS.

BY ALEXANDER BRUCE, M.D., F.R.C.P.E., F.R.S.E.,

Physician to the Royal Infirmary, Edinburgh; and

J. S. FRASER, M.B., F.R.C.S.E.,

Assistant Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

ALTHOUGH Ménière's (1) classical case was described as long ago as 1861, there is still considerable confusion on the subject of Ménière's disease, and the term is frequently applied to any condition in which giddiness is associated with a lesion of the ear. It would probably be better to discard altogether the use of the words "Ménière's disease," but, if the term be retained, it should be kept for cases in which Ménière's symptoms appear in an apoplectiform manner. Ménière's triad is usually described as consisting of "noises in the ear, giddiness, and vomiting," but v. Frankl-Hochwart (2), to whose valuable monograph we wish to state our great indebtedness, includes under the heading of Ménière's symptoms—"deafness, tinnitus, giddiness, nausea, vomiting, cerebellar ataxia, nystagmus, cold sweats, fainting, and a feeling of pressure in the head." It cannot be too emphatically stated that this "disease picture" is merely that of a lesion of the membranous labyrinth or of the eighth cranial nerve, and that it should be associated with disease of the labyrinth, just as "tremor, rapid pulse, and exophthalmos" are associated with the condition of hyperthyroidism.

In what conditions, then, do we meet with Ménière's symptoms? The answer to this question involves an attempt at classification of diseases of the inner ear and auditory nerve, although it must be admitted that our existing knowledge is barely sufficient for this purpose: many pathological conditions affect the aural labyrinth in which no microscopic examination of the labyrinth has yet been made.

CONDITIONS WHICH GIVE RISE TO MÉNIÈRE'S SYMPTOMS.

- I. *Variations in Labyrinthine Pressure, or excessive movements of the labyrinthine fluid*, as produced by forcible syringing, heat, cold, violent inflation of the middle ear, loud sounds, slight injuries (insufficient to cause hæmorrhage), dancing, the motion of the sea or of a railway train, etc.
- II. *Electrical Stimulation.*
- III. *Vascular Congestion* (*e. g.* due to amyl nitrite or otitis media, etc.) or *Anæmia* (*e. g.* quinine, general anæmia, loss of blood).
- IV. *Hæmorrhage into Labyrinth—*

{	A. Traumatic.
{	B. Due to diminished air-pressure (caisson disease).
{	C. In bleeding diseases, notably lenkæmia, pernicious anæmia, nephritis, and arterio-sclerosis.
{	D. In exanthemata (Politzer) (8).
- V. *Acute Inflammatory Conditions—*
 - A. Serous labyrinthitis.
 - B. Purulent labyrinthitis.
- VI. *Chronic Inflammatory Conditions—*
 - A. Simple chronic inflammation in chronic middle-ear catarrh? Otosclerosis.
 - B. Tubercular.
 - C. Syphilitic: (1) congenital, (2) acquired.
- VII. *Neuritis of Auditory Nerve due to—*
 - A. Acute specific fevers.
 - B. Tuberculosis.
 - C. Syphilis.
 - D. Herpetic inflammation of ganglia (Polynenritis cerebrealis Menieriformis).
 - E. Toxic conditions—quinine, salicylates, tobacco, alcohol.

VIII. *Hæmorrhage into Auditory Nerve*—

A. In bleeding diseases (includes the present case).

B. In exanthemata.

IX. *Degeneration of the Auditory Nerve and Membranous Labyrinth*—

A. Chronic progressive labyrinthine deafness.

B. Occupational deafness.

X. *Tumours*—

A. Of acoustic nerve.

B. Of cerebello-pontine angle.

XI. *Neuroses*—

Pseudo-Ménière's disease (v. Frankl-Hochwart) in epilepsy, hysteria, neurasthenia, hemicrania.

Ménière's Disease is the apoplectiform occurrence of Ménière's symptoms, and is usually attributed to hæmorrhage into the labyrinth. Before accepting a case as a true one of Ménière's disease, Schwartz and Grunert (3) demand that the ear shall have been normal up to the time of the occurrence of the symptoms but Heermann (4) points out the difficulty of being sure that the ear was previously healthy, because even intelligent patients may not know that they are deaf in one ear. F. Alexander and Manasse (5) record a case in which a patient had five or six attacks of Ménière's symptoms, and, although the whisper was only heard by the right ear at one yard, the patient did not know that he had not got perfect hearing. In most cases ear disease has existed for a long time before an attack comes on of sufficient severity to cause the patient to seek medical advice. Heermann states that out of fifty cases twenty-seven had had previous disease of the ear. Of the eleven cases recorded by F. Alexander and Manasse, six showed more or less marked signs of progressive labyrinthine deafness.

Pathology.—Almost all the cases of sudden occurrence of Ménière's symptoms, in which a microscopic examination of the inner ear has been made, have been cases of leukaemia. The only non-leukaemic case reported by v. Frankl-Hochwart is that of Gruber (6)—this was a syphilitic patient who died of typhus fever: Gruber regarded the case as one of syphilitic affection, but v. Frankl-Hochwart thinks that the conditions present—vascular injection and blood-stained labyrinthine fluid (on macroscopic examination)—may have been due to typhus. In a paper recently published by one of us (J. S. F.) on the subject of congenital syphilitic disease of the ear, it was noted that in several cases the

deafness and other symptoms of Ménière's disease came on in a single night (29).

G. Alexander (7) claims even Ménière's original case as leukæmic; Ménière's patient was a girl, aged sixteen, who caught cold whilst driving during her menstrual period; death occurred five days after the onset of the inner ear symptoms, and during these days the temperature was raised: at *post-mortem examination* red plastic exudation was found in the canals and, to a slight extent, in the vestibule; the cochlea was free; the brain and spinal cord were normal; no *microscopic* examination of the inner ear was made.

In case 13, recorded by F. Alexander and Manasse, there was, however, no trace of leukæmia. The case was that of a man, aged fifty-two, who suffered from chronic progressive labyrinthine deafness with typical Ménière's symptoms a short time before death. On microscopic examination Alexander and Manasse found recent multiple hæmorrhages in the *ramus cochlearis* and *vestibularis*; the patient died of hæmorrhage into the left lateral ventricle. In addition to the hæmorrhages in the ear, atrophy of Corti's organ and of the spiral ganglion were present. There was no facial paralysis in this case.

Our case supports the view of F. Alexander and Manasse (8) that Ménière's symptoms may come on in an apoplectiform manner in non-leukæmic cases: we must note, however, that our patient suffered from chronic (senile) progressive labyrinthine deafness and also from Eustachian obstruction on the left side.

Lucæ (9) states that in cases of chronic aural sclerosis Ménière's disease may come on suddenly without apparent cause: the patients only seek advice for the sudden attack.

Hillairet (10) was the first to point out that Ménière's symptoms might be caused by a lesion of the eighth nerve.

v. Frankl-Hochwart (pp. 13 and 14) records the clinical notes of two cases of Ménière's disease in which there was paresis of one half of the face: the second case died, but there is no mention of a microscopic examination of the ear. Similar cases are recorded by Kauffmann (11) and Hammerschlag (12). We have been able to trace the following cases of leukæmic deafness with Ménière's symptoms in which microscopical examinations of the labyrinth were made: Alt and Pincles (18) (1 case), G. Alexander (7) (15 cases), Steinbrugge (19), Mott (20), Lannois (21), Parkes-Weber and Lake (22), Schwabach (23), Politzer (8), Kock (24), and Finlayson (26). Manasse (25) examined the inner ear from thirty-

one cases of nerve-deafness, and found two with evidence of labyrinthine hæmorrhage in addition to the usual degenerative changes. Moos (27) records the case of a syphilitic patient in whom Ménière's symptoms were engrafted on existing ear disease. Microscopical examination showed periostitis of the vestibule and small-cell infiltration of the membranous labyrinth. Haug (28) reports a tabetic case in which the acoustic nerve and ganglia were affected. Moos (13) and Steinbrugge record a case of senile dementia in which hæmorrhagic pachymeningitis was found at *post-mortem*: the patient had frequently suffered from giddiness. Evidences of past hæmorrhages were found in the facial canal and also between the bundles of the cochlear and vestibular nerves. Pigment was also present in the connective tissue of the membranous labyrinth. In a similar case previously recorded the same writers found, in addition to evidences of old hæmorrhages, thickening, dilatation, and, in places, obliteration of arteries of labyrinth. Both these patients had suffered from hallucinations of hearing.

Ramsay Hunt (14) has described a syndrome characterised by herpes zoster oticus facialis, or occipito-collaris, with facial palsy and auditory symptoms. The same condition had previously been described by v. Frankl-Hochwart under the title of "Polyneuritis Cerebralis Menieriformis," and by numerous other writers. In one case Ramsay Hunt (15) demonstrated sclerosis of the nerve of Wrisberg on microscopical examination.

PRESENT CASE.

A. M'R—, male, piermaster, aged sixty-five; patient suffered from measles and typhoid as a child, and for the last few years from rheumatism and from left inguinal hernia; *no history of syphilis*; his left eye was removed thirty years ago; patient stated that he had never suffered from deafness up to the time of the last illness; father and mother died of old age, one brother of cancer and one sister of "water in the head."

There has been some difficulty in getting an accurate history of the case, but after extended inquiry we have arrived at the following account, which may be accepted as correct:

On December 1, 1907, he had a long day of exposure to cold on the pier, but went to bed at night feeling well: the following morning, December 2, 1907, he woke up suffering from extreme giddiness and from deafness and noises in the left ear; the left side of his face was paralysed; no history of vomiting was obtained; patient

stated that giddiness was the worst symptom of all; he also complained of pain in the head and limbs, and did not leave his bed for a week; while in bed he sometimes felt as if surrounding objects were moving around him.

When he did get up he had to hold on to various articles of furniture in order to get about the house; he states that he tended to fall to the right side—the side opposite to the ear lesion.

Towards the end of December, 1907, the deafness got worse.

Patient's doctor was not consulted till January 6, 1908, and patient was not examined at the Royal Infirmary till February 11, when he was seen by Dr. Logan Turner at the Ear and Throat Department at the request of one of us (A. B.). Dr. Turner's notes are as follow: Tympanic membranes are both slightly indrawn, but are otherwise normal. On the right side the watch is heard at two inches, but on the left it is not heard even on contact with the anicle. Forced whisper heard by right ear at two feet and by left ear at one foot. All tuning-forks heard by air-conduction by left ear. Rinne's test positive on both sides. On inflation with the catheter air did not enter the left tympanic cavity—right side not tested. Patient can stand with his feet together and eyes shut without swaying, but he is unable to stand on either foot alone without tending to fall. Patient suffers from left facial paralysis, but can taste salt on the anterior part of the tongue on the left side. *Herpes auricularis* was not present: this is interesting, and must be taken along with the retention of the sense of taste on the same side of the tongue. As will be seen from the account of the microscopical examination of the inner ear, the hæmorrhage did not extend beyond the internal meatus, and did not involve the facial nerve in the aqueduct of Fallopius nor the geniculate ganglion.

The patient was admitted to Dr. Bruce's ward on February 18, 1908; on admission he stated that he was giddy, even when lying in bed, but that the giddiness was worse in the open air, especially when passing vehicles.

Examination.—Patient somewhat emaciated; complete left facial paralysis; left eyebrow and left corner of mouth are depressed; no response to the faradic current on the left side of the face; the affected muscles contract slowly to galvanism, but there is no alteration of the polar reaction; superficial and deep reflexes present and active; voluntary movements are weak, and hand grip is weaker on left than on right side; *arterial walls*

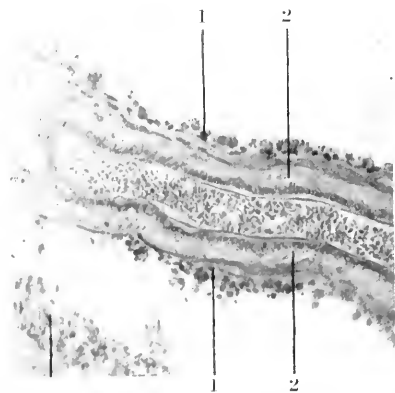


PLATE I.



Vertical Section of Cochlea and Internal Auditory Meatus, showing Hemorrhage.

1. Hemorrhage beneath epineurium. 2. Epineurium. 3. Space between epineurium and dura.



Longitudinal Section of Artery in Internal Auditory Meatus.

1. Hemorrhage. 2. Thickened middle coat of artery.



Facial Nerve (in Fallopian Canal) passing above Cochlea (note absence of hemorrhage).

1. Facial nerve. 2. Space between epineurium and wall of canal free from hemorrhage. 3. Middle coil of cochlea. 4. Basal coil.

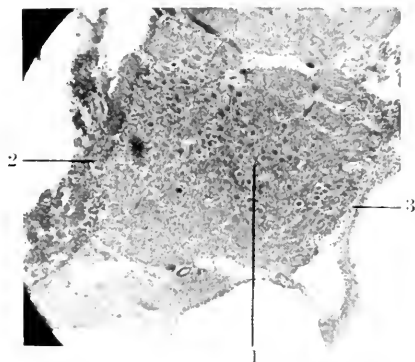


Seventh and Eighth Nerves in Internal Auditory Meatus

1. Hemorrhage beneath epineurium of seventh nerve. 2. Thickened artery. 3. Hemorrhage around vestibular ganglion. 4. Vein.

TO ILLUSTRATE DR. ALEXANDER BRUCE AND MR. J. S. FRASER'S CASE PRESENTING MÉNIÈRE'S SYMPTOMS ALONG WITH FACIAL PARALYSIS.

PLATE II.

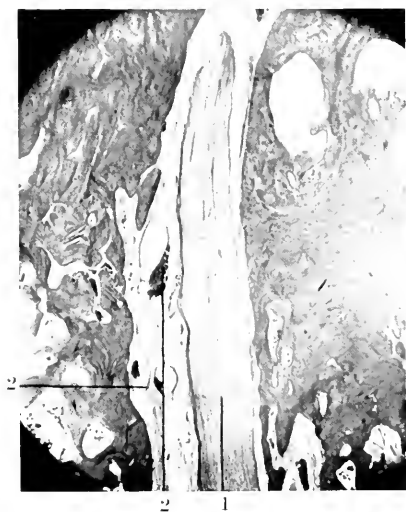


1. Vestibular ganglion. 2. Hemorrhage.
3. Epineurium.



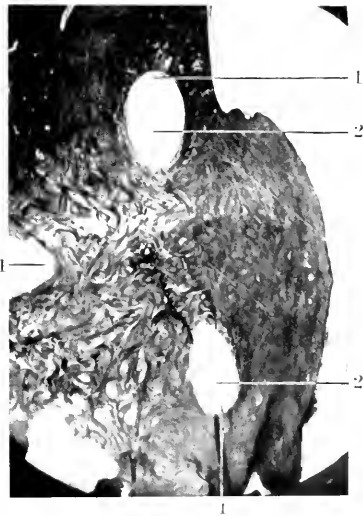
Vertical Section of Vestibule.

1. Membrane of round window. 2. Basal membrane (note absence of Corti's organ). 3. Perilymphatic space of vestibule. 4. Neuro-epithelium of anterior wall of utricle. 5. Branch of vestibular nerve to utricle. 6. Vessel. 7. Facial nerve. 8. Footplate of stapes. 9. Promontory.



Descending Portion of Facial Nerve in Canal of Fallopius.

1. Facial nerve. 2. Vessels.



Semicircular Canals, showing Absence of Hemorrhage.

1. Membranous canals. 2. Perilymphatic space.

TO ILLUSTRATE DR. ALEXANDER BRUCE AND MR. J. S. FRASER'S CASE PRESENTING
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thickened; slight rough presystolic murmur in mitral area; aortic second sound accentuated and reduplicated. *No evidence of leukaemia.*

Urine, specific gravity 1014; otherwise normal.

Lungs, both reveal extensive chronic tuberculosis.

Joints of hands swollen and painful.

The diagnosis made by one of us (A. B.) was that of neuritis of facial and auditory nerves in the internal auditory meatus; hæmorrhage in this situation was also mentioned as a probable cause of the symptoms. In the *Review of Neurology* Drs. Bruce and Pirie write: "The absence of evidence of middle-ear disease and the retention of the sense of taste, and the associated deafness, giddiness, and facial paralysis, indicated that the lesion was probably situated between the side of the pons and the bottom of the internal auditory meatus."

Treatment.—Potassium iodide 10 gr. *t.i.d.*; galvanic electricity to left side of face.

Progress.—April 4, 1908: Giddiness and facial paralysis *in statu quo*.

April 9, 1908: Irritable dermatitis on legs.

April 10, 1908: Pot. iod. stopped; aspirine, 10 gr. *t.i.d.*

April 12, 1908: Patient still feels very giddy if he sits up in bed.

April 17, 1908: Patient allowed to get up; does not tend to fall to right as much as formerly. Constant current passed from mastoid to mastoid daily.

April 24, 1908: Patient sent to convalescent house; giddiness still present; he still suffers from rheumatism.

May 2, 1908: Patient died suddenly at convalescent house from syncope this morning.

Post-mortem examination held forty-eight hours after death.

Summary.—Atrophy of second, third, fourth, and sixth cranial nerves on left side. Fatty dilated heart. Chronic venous congestion of organs. Extensive chronic pulmonary tuberculosis. Sub-acute interstitial nephritis. Brain shows definite milky thickening of arachnoid over inferior surface of cerebellum and circle of Willis; this condition extends $1\frac{1}{4}$ inches in front of optic chiasma, and also to near the tip of the temporal lobe.

Drs. Bruce and Pirie (16) found a well-marked Nissl's *Réaction à distance* limited to the facial nucleus of the same side only and a small nucleus behind it; the hypoglossal nucleus and the nucleus of the third nerve on the same and opposite sides were intact—

thus showing conclusively that the facial nucleus is the only nucleus of the facial nerve.

Examination of Left Inner Ear and Auditory and Facial Nerves.—The left temporal bone was removed at the *post-mortem* on May 4, 1908, *i. e.* forty-eight hours after death; it was at once placed in 10 per cent. formalin, where it remained till March 25, 1909. The inner ear spaces were then opened (J. S. F.), and the petrous bone was prepared for microscopic examination according to Ruttin's (17) method. The inner ear was decalcified in 10 per cent. nitric acid and 10 per cent. formol $\bar{a}\bar{a}$ for two months, the fluid being changed daily at first. The specimen was then washed for a week in running water, and placed in 70 per cent. spirit for a day or two; next transferred to 90 per cent. spirit for three days (changed) daily; then absolute alcohol for forty-eight hours (changed once); then absolute alcohol and ether for forty-eight hours (changed once); next thin celloidin for one month, and finally thick celloidin for one month. After the thick celloidin had hardened the superfluous parts were removed and the block cut in the vertical transverse direction, *i. e.* at right angles to the long axis of the petrous pyramid. In all, about 600 serial sections were cut—20 μ in thickness—and about 150 were stained with hæmalum and eosin or by van Gieson's method; owing to the want of fixation in Muller's fluid, and the prolonged soaking in formol, it was found impossible to get good results with the Pal-Weigert method. In spite of the fact that the temporal bone was only obtained forty-eight hours after death, it will be seen that the structures of the membranous labyrinth were well preserved. In forming an opinion as to the size of the hæmorrhage in the internal meatus and the condition of the auditory, vestibular, and facial nerves, it is necessary to remember the prolonged soaking of the specimen in formol solution for the period of nearly one year.

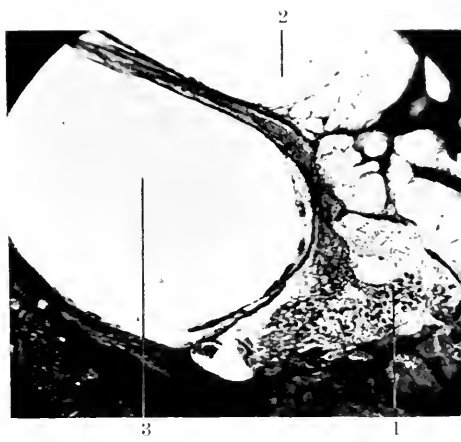
Briefly summed up, the result of the microscopic examination of the inner ear and auditory and facial nerves was as follows: The inner ear was almost normal; there was no hæmorrhage in the endo- or peri-lymphatic spaces of the cochlea, vestibule, or canals; the membranous labyrinth was also almost normal, as was the spiral ganglion; the neuro-epithelium of the utricle, saccule, and of the *cristæ ampullarum* was well preserved. In the lower turn of the cochlea Corti's organ was absent or degenerated. The mucous membrane of the middle ear was normal.

As will be seen from the result of Dr. Logan Turner's

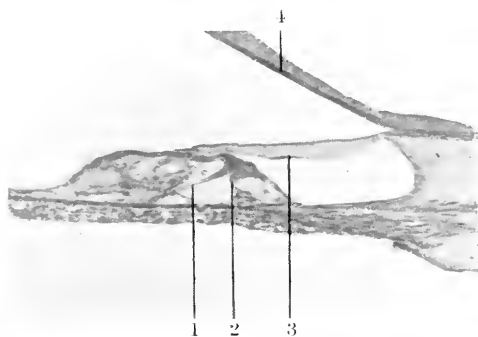
PLATE III.



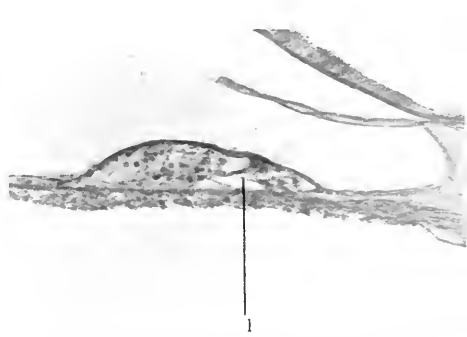
Three Scalae of Cochlea from Middle Coil.
 1. Scala vestibuli. 2. Scala media (cochlear canal). 3. Scala tympani. 4. Epithelial cells covering stria vascularis. 5. Basilar membrane.



Spiral Ganglion of Middle Coil of Cochlea.
 1. Cells of ganglion. 2. Scala vestibuli. 3. Scala tympani.



Corti's Organ from Middle Coil of Cochlea.
 1. Outer pillar cell. 2. Inner pillar cell. 3. Membrana tectoria. 4. Reissner's membrane.



Corti's Organ from Middle Coil of Cochlea.
 1. Nerve fibre crossing tunnel of Corti.

TO ILLUSTRATE DR. ALEXANDER BRUCE AND MR. J. S. FRASER'S CASE PRESENTING
 MÉNIÈRE'S SYMPTOMS ALONG WITH FACIAL PARALYSIS.

examination of the patient, the case was probably one of chronic progressive (labyrinthine) deafness.

In the internal meatus there was a considerable amount of hæmorrhage between the epineurium and the seventh and eighth nerves; this was most marked above the seventh nerve; there was no hæmorrhage between the dura mater and epineurium. The vessels in the internal auditory meatus were markedly thickened, and the muscular coat had undergone a hyaline change. The hæmorrhage did not extend into the Fallopian canal, and did not therefore affect the geniculate ganglion; the modiolus of the cochlea and the small canals for the vestibular nerves were also free from hæmorrhage. Reference to the reproductions of the photo-micrographs will demonstrate the pathological condition present better than a more detailed description.

In conclusion one of us (J. S. F.) would like to express his thanks to the Royal College of Physicians (Edinburgh) for permission to carry out the microscopic work in the laboratory of the college, and also to the Carnegie Trustees for their kindness in providing the photomicrographs and half-tone blocks.

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- (6) GRUBER.—*Lehrbuch der Ohrenheilk.*, 2 Aufl., 1881.
- (7) G. ALEXANDER.—*Zeitsch. f. Heilk.*, 1906; records fifteen cases of leukæmic deafness. In one there was an infiltration of the right auditory and facial nerves in addition to extensive hæmorrhage in both labyrinths.
- (8) POLITZER.—*Lehrbuch der Ohrenheilk.*
- (9) LUCAE.—“Die Chron. progress. Schwerhörigk.,” Berlin, 1907.
- (10) HILLAIRET.—*Mém. de la Soc. de Biol.*, 1861.
- (11) KAUFMANN.—*Zeitsch. f. Ohrenheilk.*, Bd. 28.
- (12) HAMMERSCHLAG.—*Archiv f. Ohrenheilk.*, Bd. 45.
- (13) MOOS and STEINBRUGGE.—*Zeitsch. f. Ohrenheilk.*, 1881, p. 102.
- (14) RAMSAY HUNT.—*Amer. Journ. Med. Sci.*, August, 1908.
- (15) ———. *Journ. of Nerc. and Ment. Dis.*, February, 1907.
- (16) BRUCE and PIRIE.—*Review of Neurol. and Psych.*, 1908, p. 685.
- (17) RÜTTIN's method.—*Verhandl. Oesterr. Otol. Ges.*, November 26, 1906.
- (18) ALT and PINELES.—*Wien. klin. Wochenschr.*, 1896, p. 849; showed that Ménière's symptoms may arise in a leukæmic case from infiltration of the acoustic nerve; the middle and inner ears were normal.
- (19) STEINBRUGGE.—*Deutsch. med. Wochenschr.*, Vereinsbeil., 1897. Inner ear spaces and acoustic nerve involved in the leukæmic hæmorrhages and infiltrations.

(20) MOTT.—*Med. Clin. Trans.*, vol. lxxxiii, 1900, found leukæmic infiltration in cochlea and canals.

(21) LANNOIS.—*Annal. des Mal. de l'Oreille*, etc., 1892; found extravasation of blood in vestibule and in canals undergoing organisation; new connective-tissue formation in the bony canals; cellular infiltration in scala vestibuli of first turn of cochlea.

(22) PARKES-WEBER and LAKE.—*Proc. Roy. Med. and Clin. Soc.*, 1900; found new formation of fibrous and bony tissue in the scala tympani and in the perilymphatic spaces of the canals.

(23) SCHWABACH.—*Zeitsch. f. Ohrenheilk.*, Bd. 31, S. 103. Fifteen cases of leukæmic deafness; five had apoplectiform attacks.

(24) KOCK.—*Ibid.*, Bd. 50, S. 431. Hæmorrhage in cochlea and canals.

(25) MANASSE.—*Ibid.*, Bd. 52; examined thirty-one inner ears from cases of nerve deafness, and found two with evidences of labyrinthine hæmorrhages in addition to degenerative changes.

(26) FINLAYSON.—*Brit. Med. Journ.*, December 31, 1908, p. 1925; records another leukæmic case with hæmorrhage in vestibule and first turn of cochlea.

(27) MOOS.—*Virchow's Archiv*, Bd. 69, S. 313. Syphilitic patient: Ménière's symptoms engrafted on existing ear disease; periostitis in vestibule; small-cell infiltration of membranous labyrinth.

(28) HAUG.—"Die Krankheiten des Ohres in ihren Beziehungen," etc., 1893. Tabetic case: the acoustic nerve-ganglion and accessory ganglia were affected.

(29) FRASER.—*JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, August, 1909.

A NEW CONTRIBUTION TO THE OPERATIVE TECHNIQUE OF THE LABYRINTH.¹

BY DR. BOURGUET,

Chef de Clinique of the Faculty of Medicine, Toulouse.

TRANSLATED BY MACLEOD YEARSLEY, F.R.C.S.,

Senior Surgeon to the Royal Ear Hospital.

IN 1905, in our inaugural thesis, "The Surgical Anatomy of the Labyrinth," we showed how we should understand the opening of the internal ear in case of diffuse suppurative labyrinthitis. We then extolled the opening of the cochlea and of the anterior branch of the external semi-circular canal, and as the facial nerve passes parallel to this anterior branch, we constructed a protector in order not to injure it. The French school, despite Lermoyez's article in *La Presse Médicale* at Bordeaux in 1904, the French school, we say, does not stimulate research in this matter. The Viennese school, on the contrary, with Alexander, Neumann, and Bárány (1), has used every effort to unravel and make precise the somewhat delicate symptomatology of this organ. The first of all these

¹ Slightly abridged from the *Bulletins et Mémoires de la Société Française d'Oto-Rhino-Laryngologie*, 1909.

researches is recorded in a monograph of Bárány, assistant in Politzer's clinic, in 1907. It is in consequence of this work that in France the experimental and pathological nystagmus of the vestibular apparatus is investigated. Lombard and Halphen (2), the same year, published a work "On Elicited Reflex Nystagmus as a Diagnostic Method in Functional Conditions of the Vestibular Apparatus." Pietri (3), in the *Journal de Médecine de Bordeaux*, studies elicited nystagmus in his reports with the labyrinthine affections, and, a little later, the same author, in collaboration with Manpetit (4), studies this same nystagmus apart from all pathological affection. Hautant (5), Lemaître and Halphen (6) have equally studied this subject.

We ourselves are again occupied with the surgery of the internal ear, and it is the result of this work that we would describe.

We consider that the opening, such as we practised (7), was insufficient, for we left the frontal, sagittal, and the posterior branch of the horizontal canal intact. Nevertheless, all these parts may contain pus in a case in which the suppuration is diffuse. The operation was incomplete, since we left a source of infection which might cause a meningitis or any other cerebral complication to follow. At the present time we open all the canals, making the operation as extensive as possible. The following is our method of procedure :

At the beginning, to make a large excavation, carrying it as far back as possible ; reaching above to the posterior prolongation of the zygomatic arch and to the point at which this arch recurves, and to remove as much as possible of the buttress over the facial, so as to bring part of the oval and round windows well into view. This is most important if it is wished to obtain a very clear view over the promontory. To facilitate this inspection it is good to resect the whole of the posterior wall of the membranous auditory meatus. In this excavation the descending branch of the lateral sinus is often laid bare, especially if it is slightly procident. Excavation thus practised extensively, the anterior branch of the horizontal canal is very clearly seen ; the edge of a sufficiently fine gouge is then applied to the point at which this canal changes its direction, and its curve is opened by one cut. Then, parallel to the buttress over the facial between it and the sinus, going from below up and a little behind forwards, the bone is excavated more and more deeply. The posterior canal is opened at its deepest part.

In a second stage digging with the gouge is continued between the sinus and the buttress over the facial, taking as a landmark the posterior branch of the horizontal canal, thus working behind the facial and on a plane slightly inferior, thus going in a forward direction. By this means the vestibule is opened in its posterior part. It is sufficient to take a light curette, to introduce it into the vestibule by the artificial opening, and to make it come out at the oval window, passing under the facial, in order to make sure that the vestibule is well opened behind.

In a third stage the heel of our protector (which we have modified) is introduced into the oval window, the metallic plate, measuring about 3 mm., hugging the aqueduct of Fallopius, so as to protect the facial. The protector is held by an assistant. With the help of a graving chisel, this smooth, polished prominence of the aditus is removed from behind forwards, and the anterior branch of the horizontal canal is opened. The plate of the protector prevents the graving chisel from going astray towards the lower part and injuring the facial; similarly the beak of this same protector protects the nerve in front in cases where the chisel may tend to slip forward. It is enough, further, if the excavation has been large and sufficiently extended above, to give two cuts of the chisel in the vertical direction, at the point where the ampullary orifice of the horizontal canal has been opened, to lay bare the ampullary orifice of the frontal canal and a part of its anterior branch.

In a last stage, the protector remaining in place, the promontory can be ablated by means of a gouge, without any difficulty. It is enough to rest the convexity of the instrument against the buttress over the facial, the edge of the gouge applied on the line of separation of the round and oval windows, and to give a cut, followed by another cut on the side of the orifice of the Eustachian tube. This is sufficient to remove the cap of the cochlea formed by the promontory.

Thus the vestibule is laid open behind, by following the posterior branch of the horizontal canal; above, by opening the two ampullary orifices of the two canals, external and frontal; below, by throwing the two windows, oval and round, into one.

(1) BÁRÁNY.—"Physiologie und Pathologie des Bogengang—Apparates beim Menschen," 1907.

(2) LOMBARD and HALPHEN.—*Progrès Médical*, April 18, 1907.

(3) PIETRI.—*Journal de Médecine de Bordeaux*, April, 1908.

(4) PIETRI and MAUPETIT.—"Elicited Nystagmus Apart from all Pathological Affection," *Rev. de Laryngol.*, November 21, 1908, p. 609.

(5) HAUTANT.—“Functional Examination of the Semi-circular Canals by Reflex Nystagmus,” *Ann. des Mal. de l'Oreille*, September, 1908, p. 245.

(6) LEMAITRE and HALPHEN.—“Nystagmus and the Internal Ear,” *ibid.*, p. 672.

(7) BOURGUET.—“Surgery of the Labyrinth,” *ibid.*, 1905, t. ii, p. 218.

THE SENSORY SYMPTOMATOLOGY AND SYNDROME OF THE FACIAL NERVE: OTALGIA, HERPETIC INFLAMMATIONS OF THE GENICULATE GANGLION, REFLEX FACIAL SPASMS.¹

BY J. RAMSAY HUNT,
New York,

A REVIEW of the sensory symptomatology of the facial nerve, with special reference to the following contributions by the author: “On Herpetic Inflammations of the Geniculate Ganglion; a New Syndrome and its Complications,” *Journal of Nervous and Mental Diseases*, February, 1907. “A Further Contribution to the Herpetic Inflammations of the Geniculate Ganglion,” *American Journal of American Sciences*, August, 1908. “Otalgia Considered as an Affection of the Seventh Cranial Nerve,” *Archives of Otology*, July, 1908. “The Sensory System of the Facial Nerve and its Symptomatology,” *Journal of Nervous and Mental Diseases*, June, 1909, by J. Ramsay Hunt, M.D., of New York.

The author reviews his contributions to the sensory symptomatology of the facial nerve. The facial nerve has been regarded as a mixed nerve by anatomists and embryologists for a decade or more, and as having a sensory root and ganglion similar in structure and function to the sensory ganglia of the spinal nerves and those of the mixed cranial nerves. This ganglion is called the geniculate ganglion, or the *intumescencia ganglioformis*, situated in the depths of the internal auditory canal at the entrance to the aqueduct of Fallopius, at which point the trunk of the facial nerve makes a sharp bend. The sensory root of this ganglion is the *pars intermedia* of Wrisberg, which lies between the facial proper and the auditory nerve. The nerve of Wrisberg enters the substance of the medulla between the roots of the seventh and eighth nerves and passes to the fasciculus solitarius, having the same mode of termination as the sensory roots of the glossopharyngeal and the vagus nerves. On the distal side of the geniculate ganglion, sensory fibres pass into the *great superficial petrosal* nerve to

¹ *Journ. of Nerv. and Mental Dis.*, vol. xxxvi, No. 6, 1909, etc.

Meckel's ganglion, which is situated on the second division of the fifth, and which gives off in its course fibres which enter into the formation of the tympanic plexus through the *great deep petrosal* nerve; sensory fibres also pass in the *small superficial petrosal* nerve to the otic ganglion on the third division of the fifth, this nerve also sending fibres which enter into the formation of the tympanic plexus through the *small deep petrosal* nerve.

Other sensory fibres also course with the motor trunk of the facial in the aqueduct of Fallopius. These are of two kinds—the one composed of fibres which pass in the chorda tympani to the anterior two thirds of the tongue and subserve the function of the sense of taste; the other consisting of fibres of general sensation, of geniculate origin, however, which emerge with the trunk of the facial at the stylomastoid foramen and pass to the external surface and interior of the auricle. The geniculate ganglion (zoster zone of the geniculate), therefore, has a splanchnic distribution within the cavity of the mouth and middle ear and a somatic distribution on the external ear.

In the lower structural types the sensory system of the facial nerve exceeds in importance its motor function. But in the course of phylogenic development its sensory system has diminished in extent and its motor system has increased, so that in man the splanchnic distribution within the buccal cavity (exclusive of the taste function) must be regarded as more or less vestigial. But there still exists an important sensory distribution of facial origin within the middle ear, including its prolongations into the mastoid cells and Eustachian tube, as well as on the external ear.

There are also anastomotic filaments which pass from the geniculate ganglion to the auditory nerve at its termination (internal ear), so that in man, save for a vestigial remnant of general sensation and the chorda tympani within the mouth cavity, the sensory system of the facial is confined to the innervation of the auditory mechanism. In order to simplify the complicated anatomical nomenclature of this region, for purposes of clinical descriptions the author suggests the following reconstruction:

The facial or seventh cranial nerve is composed of two roots, a motor and a sensory, which unite at the level of the geniculate ganglion. On the distal side of the ganglion the nerve is divided into three branches or divisions, analogous to the terminology which has been assigned to the trigeminus on the distal side of its ganglion.

PERIPHERAL DIVISIONS OF THE SEVENTH NERVE.

First division: The great superficial petrosal nerve, passing to Meckel's ganglion and giving off in its course a tympanic branch.

Second division: The small superficial petrosal nerve, passing to the otic ganglion and giving off in its course a tympanic branch.

Third division includes the motor trunk, the chorda tympani, and the sensory fibres destined for the external ear. Around this third division is grouped the well-known symptomatology of Bell's palsy.

Such a reconstruction of the facial system, while perhaps not serving the purposes of the anatomist, who divides the branches of the facial according to their relations to the temporal bone into intra- and extra-petrons, would serve as a practical basis for clinical descriptions, and would give to the sensory mechanism of this nerve the importance which it deserves.

That the facial nerve should stand in a close sensory relation to the structures of the auditory mechanism is not surprising when one considers that this nerve is a branchial nerve, and throughout the whole course of phylogenic development stands in close relation to the first branchial cleft and its adjacent visceral arches, more especially the posterior or the hyoid arch. From this cleft and adjacent arches are developed the structures of the middle and external ear.

Another developmental factor bearing on the close relationship of the nerve to the auditory mechanism is found in its relationship to the auditory ganglia, from which are developed the *cochlear* and *vestibular* divisions of the auditory nerve. The acoustic ganglia and the geniculate are derived primarily from the *neural ridge*, and in the earlier stages of embryonic life are grouped together into a common ganglionic mass—the *ganglion acousticum-faciale*, and it is only in the later stages of embryonic life that they become differentiated into the geniculate, from which are derived the fibres of the sensory root of the facial; the ganglion *spirale*, which gives rise to the fibres of the cochlear nerve; and the ganglion of *Scarpa*, which gives rise to the fibres of the vestibular nerve. So that both in the development of the neural, as well as in the other structures of the auditory mechanism, embryological investigations have shown a most intimate relationship between the facial nerve and the *internal*, *middle*, and *external* ear. That the sensory function of the facial nerve, in its relationship to the auditory mechanism, has escaped detection, is to be ascribed to the very complex and

intricate anatomy of this region. The trigeminus, glosso-pharyngeal, vagus, and the upper cervical nerves all converge and anastomose in the ear cleft, but I would particularly emphasise the fact that the facial nerve plays a central and important part in the innervation of this region.

SENSORY SYMPTOMS AND SYNDROMES.

(1) *The Herpetic Inflammations of the Geniculate Ganglion.*—As the geniculate ganglion is composed of the so-called *spinal type* of cells, similar to those of the spinal, Gasserian, glosso-pharyngeal, and the vagus ganglia, it may in common with these ganglia be the seat of the specific inflammations of herpes zoster. With this ganglion involvement there occur pre- and post-herpetic pains in the depths of the ear, mastoid, and in the auricle (*herpetic otalgia*). The herpetic eruption appears on the auricle and auditory canal (*herpes oticus*). The exact boundaries of the zoster zone for the geniculate have not as yet been definitely established, but according to the author's investigations it would correspond to the following landmarks on the ear, external meatus, concha, anti-tragus, anti-helix, fossa of the anti-helix, and the lobule. It is not improbable that the geniculate is represented as well on the postero-mesial surface of the auricle and adjacent mastoid region.

Attention is also directed to the occasional occurrence of an herpetic eruption in conjunction with facial palsy, situated on the anterior two thirds of the tongue and peritonsillar region; and as the geniculate has a vestigial innervation within the mouth cavity, it is possible that these eruptions also are to be referred to the geniculate ganglion.

Herpetic inflammations of the geniculate ganglion are not infrequently complicated by peripheral facial palsy, the occurrence of which is to be explained by an extension of the inflammatory process to the adjacent motor fibres of the facial nerve (*herpes oticus with facial palsy*.)

In addition to the occurrence of facial palsy, acoustic complications are not an infrequent accompaniment of herpes oticus. These vary in degree from a slight diminution of hearing (hypo-acousis) to the severe forms of Ménière's syndrome, tinnitus aurium, deafness, nystagmus, nausea, vomiting, and disturbances of the equilibrium (*herpes oticus with facial palsy and auditory symptoms*).

The fusion of these three clinical types constitutes a well-defined syndrome. The author refers these auditory complications either to a direct extension of the inflammatory process to the adjacent

auditory nerve or to a primary herpetic involvement of the acoustic ganglia themselves (ganglion *spirale* and the ganglion of *Scarpa*).

A sub-group of this syndrome also occurs, in which facial palsy and auditory symptoms occur with an eruption of herpes zoster, which is confined to the zoster zones for the Gasserian ganglion (*herpes facialis*), or the upper cervical ganglia (*herpes occipito-collaris*). The occurrence of facial palsy and auditory symptoms in conjunction with *herpes facialis* and *herpes occipito-collaris*, the geniculate zone being free, is to be explained on the basis of *multiple involvement* of the ganglia in zona, the chief or eruptive focus being situated in the Gasserian or cervical ganglia, while at the same time an inflammatory reaction is present in the geniculate, which does not produce an eruption, but which is sufficient to implicate the adjacent motor fibres of the facial nerve. The auditory symptoms in conjunction with herpes facialis and herpes occipito-collaris are to be referred to an inflammatory reaction of the same nature in the acoustic ganglion.

Neuralgic Affections of the Facial Nerve (Otalgia).—We have already seen that the sensory system of the facial nerve occupies a central and an essential part in the innervation of the auditory mechanism. And when one considers the very sensitive structure of the auditory mechanism, and its exposed situation through the auditory canal and Eustachian tube, it is not surprising that neuralgic affections of this system are of frequent occurrence.

Pure otalgia is therefore to be regarded as a neuralgic affection of the sensory system of the seventh cranial nerve, and is characterised by the occurrence of neuralgic pain in the depths of the ear, the mastoid region, and in the annicle. A Valleix tender point is occasionally noted in front of the tragus. Various clinical types may be recognised.

(1) *A Primary or Idiopathic Otalgia (tic douloureux of the ear).*

(2) *Reflex Otalgia.*—In this group of cases sharply circumscribed pains in the auditory mechanism occur in conjunction with ulcerative affections within the buccal cavity and naso-pharynx in the distribution of the second and third divisions of the fifth nerve. This group may be regarded as a *referred visceral pain*. The focus of irritation is situated in the trigeminal area, which is reflected through the great and the small superficial petrosal nerves to the geniculate.

(3) *Secondary Otalgia.*—In this group, pains following herpetic inflammations (*herpetic otalgia*) and the involvement of the geniculate from without (tumour growths).

(4) *Tabetic Otagia*.—In the course of tabes dorsalis, sharply circumscribed lancinating pains may occur in the depths of the auditory mechanism. The author has observed five cases of this character, in one of which degenerative changes were demonstrated in the pars intermedia of Wrisberg.

Attention is also directed to the possible surgical importance of neuralgic affections of the facial nerve, and in the event of other measures failing operative intervention may be considered, similar to those which have been utilised in the treatment of obstinate neuralgia of the face (nerve-stretching, alcohol injections, ganglion extirpation, and section of the posterior root).

THE SENSORY MECHANISM OF THE FACIAL NERVE AS A REFLEX FACTOR IN THE PRODUCTION OF FACIAL SPASMS AND TWITCHINGS.

We have seen that the sensory system of the facial nerve has the following distribution: coursing with the motor root at the base of the brain and in the internal auditory canal; branches to the terminal division of the acoustic (internal ear), the middle ear, Eustachian tube, and the mastoid cells through the petrosal nerves, and with the trunk of the seventh in the Fallopiian aqueduct; so that in dynamic or structural lesions the stimuli would be conveyed directly to the nucleus of the seventh nerve. The result of these afferent irritative stimuli, resulting in peripheral motor discharges of a nuclear character, peripheral facial spasms, twitchings, and myokymia. The recognition of the influence of the sensory facial in the production of these spasms has a practical importance, indicating the careful treatment of local affections of the auditory mechanism.

SENSORY SYMPTOMS OCCURRING IN THE COURSE OF FACIAL NEURITIS.

In the so-called rheumatic facial neuritis sensory symptoms are of frequent occurrence. In the experience of the writer, *pain* is of almost constant occurrence, being absent in only two out of thirty consecutive cases. This pain is situated in the depths of the ear, the mastoid, or upon the auricle, and may precede, and often follow, the appearance of palsy. In severe cases the pain radiates to the face and occipito-cervical region.

The author has been able to demonstrate in nine out of thirty consecutive cases a distinct area of hypæsthesia in the *concha auris*. In one case there was increased sensitiveness of the concha,

and in two cases the aural reflex produced by touching the entrance to the external meatus was absent. It is to be emphasised that this area of hyperæsthesia corresponds to the zoster zone for the geniculate ganglion.

In conclusion, the author expresses his belief that the sensory symptomatology of the seventh cranial nerve deserves an established place in the *nomenclature*, and that this sensory system, although small in area, is of great importance because of its relation to the highly developed and very sensitive auditory mechanism.

SOCIETIES' PROCEEDINGS.

INTERNATIONAL CONGRESS OF MEDICINE AT BUDAPEST.

September, 1909.

SECTION OF OTOTOLOGY (AND INTERNATIONAL CONGRESS OF OTOTOLOGY).

(Continued from p. 389.)

HISTOLOGY AFTER FUNCTIONAL EXAMINATION OF THE EARS.

BY RUDOLF PANSE (Dresden, Neustadt).

Necrosis of the cochlea causes complete deafness. Differential diagnosis between disease of the auditory nerve and of the labyrinth cannot be made by examination of the hearing. In both conditions the most certain sign is shortening of the bone conduction. A whisper may still be heard after degeneration of Corti's organ, and high notes after loss of the basal ganglia. Corti's organ may be unaffected in cases of complete deafness. Complete deafness may be present where the labyrinth is normal but both tympanic windows are closed.

THE CHANNELS OF THE PROPAGATION OF INFECTION FROM THE MIDDLE EAR INTO THE INTERIOR OF THE CRANIUM.

BY DR. J. MOURET (Montpellier).

The middle ear, through its pneumatic annexes (the mastoid and intra-petrous cells), may extend into nearly the whole of the

temporal bone, isolating the labyrinth from the superficial osseous shell, as well as from the petrous pyramid. This disposition of the pneumatic apparatus accounts for the extension, sometimes so rapid, of the infection from the tympanic cavity to the most distant parts of the mastoid and of the petrous bone.

Suppuration of the middle ear may penetrate into the cranium either by passing through the walls of the tympanum or of its pneumatic annexes.

Channels from the Middle Ear.—(1) Bony dehiscences; (2) lesions of the internal table of the bone; (3) anatomical apertures for arteries, veins, or nerves which communicate between the middle ear and the cranial cavity; (4) the route through a vein or sinus; (5) ready-formed channels, the aqueduct of Fallopius or the petro-mastoid canal. Perforation of the bone and venous infection are the two commonest means by which suppuration of the middle ear passes into the interior of the cranium. Perforations are situated by preference where the internal table of the bone offers least resistance either under normal conditions, the roof of the tympanum, or of the tympanum and the antrum, or the floor of the tympanum, or else by the formation of large cells, where the pus easily stagnates on account of their size and of their dependent position (perisinus wall, posterior wall of the petrous bone).

The Channel through the Internal Ear.—The infection may reach the internal ear, in the first place, and pass from there into the cranial cavity—(1) by dehiscences (rare); (2) through lesions of the osseous capsule of the labyrinth; (3) through the anatomical apertures for the passage of the auditory nerve and of the arteries and veins of the internal ear; (4) by the intra-venous route; (5) by pre-existing channels, viz. the aqueduct of the vestibule and that of the cochlea; (6) by routes improperly called lymphatic (the lymph-vessel of the aqueduct of the cochlea, small channels passing from the sacculus endolymphaticus, the peri-vascular sheaths of the internal auditory artery).

The advance of the infection into the interior of the cranium may take place—(1) directly, by continuity of the lesions from organ to organ; (2) by intra-venous propagation (thrombosis, or pathogenic germs carried by the blood); (3) by diffusion of infective germs into the spaces of the cranial cavity.

Propagation of the otitic infection into the interior of the cranium by lymphatic channels does not exist.

ON THE INDICATIONS FOR OPERATIVE TREATMENT OF SECONDARY SUPPURATIVE LABYRINTHITIS AND ITS TREATMENT.

BY DR. E. SCHMEGELOW.

The paper is based upon the experience of forty-two cases of labyrinthitis consecutive to purulent lesions of the middle ear.

Ten cases with circumscribed labyrinthitis, either partial or severe, were cured after opening and evacuation of the cavity of the middle ear. In the other thirty-two cases there was diffuse suppuration of the labyrinth with complete deafness.

The operation on the labyrinth is not indicated in all cases of secondary lesions of the labyrinth. The indications for an operation on the labyrinth do not depend solely on functional tests, but also on the advance of the disease, and on the direct examination of the labyrinth wall after the radical operation.

The treatment of secondary labyrinthitis consists sometimes in a thorough prophylaxis, and sometimes in an operative opening of the labyrinth cavities.

The opening of the labyrinth can be performed in different ways. The operation recommended by Jansen and Neumann should not be the principal method. It is a difficult and deep operation, and should only be resorted to when there is reason to suppose that, besides the affection of the labyrinth, there is suppuration in the posterior cranial fossa. The labyrinth can be opened by means of the burr, but the author prefers the gouge and mallet, which allows a more certain mode of working and a better guidance of direction. The method proposed by Uffenorde guards against accidental injuries of the facial nerve. The facial nerve is exposed by cautiously opening the facial canal so as to lay it bare, then the semi-circular canal, the vestibule, and the cochlea are opened. Thus the whole labyrinth can be removed while making every effort to preserve the facial nerve. At the end of the operation the nerve can be seen passing down free in the resected cavity.

In 22 of 32 cases of diffuse purulent labyrinthitis the treatment consisted only in the radical operation on the middle ear. Of these 22 cases, 2 died of complications preceding the operation. Of the 20 remaining cases, 2 died, whilst 13, or 65 per cent., recovered. In 10 cases the labyrinth was opened. In 7 cases a cure was obtained, but 2 patients died of complications dating from before the operation, and 1 of meningitis, which broke out seventeen days after the operation.

CONCERNING VENOUS CONGESTION IN DISEASES OF THE EAR.

By DR. SPIRA (Krakau).

Most authors are opposed to this method of treatment. A minority, to whom the writer belongs, believe that the method can be of value if carried out with care and under proper observation. He is of opinion that there is no doubt that an operation, which would otherwise have been necessary, may be avoided in many cases of acute middle-ear suppuration by the use of venous congestion. It is, however, right not to limit oneself to the use of congestion, but also to combine this with aspiration. A suction apparatus is applied over the mastoid process, or previous to its application an incision may be made through the soft parts. A so-called apparent cure used also to occur after the ordinary methods of treatment, where an affection of the mastoid process suddenly appeared long after cure of the middle-ear inflammation. To avoid such disappointment it is advisable not to consider the patient cured till all symptoms, subjective and objective, have disappeared and the drum membrane has regained its normal appearance, and also the hearing has correspondingly improved. Intermittent appearance of fever, continued or recurring tenderness over the mastoid process, delay in the return of the membrane to its normal appearance, lack of marked improvement in the hearing, and so on, should suggest the possibility of a focus of disease in the depth of the mastoid process necessitating operation, in spite of disappearance of suppuration and a feeling of well-being. In chronic cases the method may be of value where there is no caries or cholesteatoma, but as a general rule much cannot be expected of it. In acute cases it is contra-indicated where there is a suspicion of an intra-cranial complication, or of infection of the labyrinth in cases of cholesteatoma, or in cases of severe general infection.

Prof. SCHWARTZE said that the experiments in his own clinique, as well as the reports of even those who defended this method of treatment, had shown that it was not worthy of adoption on account of certain dangers which followed its use. The abolition of pain consequent upon the venous congestion concealed the dangers of the disease, so that the necessary operations were not undertaken until it was too late.

Dr. HOLINGER (Chicago) said that the congestion treatment had not taken the place of the older methods of treating acute middle-ear inflammations with ice, etc. With regard to the treatment by suction, on the other hand, the results were better, as was shown by a case which he related. But caution was necessary with this also, for in one of the cases where he had used suction without any benefit, the radical operation disclosed the fact that the sinus was exposed to the extent of 2 cm. In

another case he considered that the treatment had prolonged life for a year. The case was one of a woman with acute otitis media and symptoms of meningitis, headache, insomnia, rigidity of the neck, etc. Suction led to an amelioration of all the symptoms in the course of four weeks. A year later a second acute attack took place and caused death in two days. The *post-mortem* showed a dehiscence in the tegmen tympani from which thin pus was exuding. Dura and pia showed scars at this spot. The base of the cerebrum was swimming in pus and the cerebral substance was everywhere reddened. That is to say, the scars indicated that the first attack was in reality one of meningitis, which had been cured by the suction. The new suppuration had struck immediately through the scar to the base of the brain. Suction was then unavailing, because the scar occupied the dehiscence. Whether an operation would have helped the patient was doubtful. The last attack was too fulminating to be relieved by this means; but the first might have been cured had operation been carried out promptly.

Dr. FLEISCHMANN (Budapest) agreed entirely with Prof. Schwartz. The Bier treatment transformed a manifest into a latent mastoiditis, and led to fatal delay in operating.

Dr. WANNER (Münich) said that the Bier treatment made operation more necessary, and could only be recommended to surgeons who were anxious to operate.

THE PROGNOSIS AND TREATMENT OF OTOGENIC PYÆMIA, SINUS PHLEBITIS, AND SINUS THROMBOSIS.

BY DR. V. UCHERMANN (Christiania).

With reference to the treatment of sinus phlebitis and sinus thrombosis, it must be remembered that the terms are not synonymous. Thrombosis is always a result of phlebitis, but the latter need not necessarily be accompanied by thrombosis. Phlebitis has, however, been nearly forgotten in the consideration of thrombosis.

The thrombi never spread further than the inflammation of the wall, and in addition require a relative stagnation of blood. A slowing of the blood-stream can only occur through swelling of the sinus wall, occasionally along with external pressure, and not through the growth of an adherent thrombus. The swelling is usually found in the genu, sometimes also below it and in the bulb, or in those areas alone. On the brain side of the narrowing thrombi can always be found as far as the inflammation of the wall extends. Towards the heart it will depend on whether the blood has had time to flow away or not, and on the presence or position of tributaries. At every point in the inflamed and thickened wall the swelling may become so great that the lumen is obliterated. This explains naturally the intermittent appearance of thrombi. If the wall of the jugular vein is found to be collapsed at the operation a thrombus may well be found nearer the heart, but if

the wall of the vein appears healthy it may be decided practically with certainty that the vein-wall is also healthy further down, and that no thrombus is present. It is unnecessary to look for one. The treatment must be conducted in accordance. Grünert's operation is necessary only in the severest cases. Vass's operation is unsatisfactory.

THE QUESTION OF LIGATURE OF THE JUGULAR IN INFECTIVE SINUS THROMBOSIS.

BY DR. TÖRÖK (Budapest).

Dr. BÁRÁNY advised the introduction into brain-abscess cavities of an elastic drain in order to avoid pressure upon the surrounding tissue.

Dr. RUTTIN remarked that two different views had been laid before them—the one by Dr. Uchermann, who did not tie the jugular and cleared the sinus out, and the other by Dr. Török, who did tie the jugular and did not clear out the sinus. Such differences were, as a rule, bad signs for a method of treatment. This, however, did not hold good with reference to tying the jugular, the differing opinions upon which, he thought, arose from people expecting too much of it. All that could be looked for was that ligation of the vein would hinder pyæmia, unless metastases had already appeared. If, however, metastasis had already taken place, the effect of ligation was, of course, not certain, although the literature contained many reports of cases with metastasis which had got well. Thus we might take up the position of advocating evacuation of the sinus whenever it contained a thrombus. Besides, no one could say when a thrombus was sterile and when it had become infected. In the same way, also, no one could say whether or not a portion of the thrombus had become detached. He could recall many cases where the jugular was normal, and only the sinus was diseased, in which, nevertheless, metastasis had occurred.

Dr. ALEXANDER (Vienna) remarked that cases of sinus thrombosis in children were very uncommon, and he believed that the slight cases mentioned by Dr. Uchermann represented nothing more serious than acute otitis with high fever and rigors, but in other respects free from complication. The insertion of tampons between the sinus and its bony wall was to be deprecated. In like manner, pressure, careless probing, and all such manipulations should be avoided, since they were liable to induce acute purulent meningitis. Apart from unusual cases, our operations should be so planned as to avoid the necessity for repeated interference. Every fresh interference made the prognosis worse by favouring the degeneration of the cardiac muscle and of the large glands. He also advocated the removal of the obstructing ends of a thrombus, for these ends were frequently infected and filled with masses of bacteria.

Prof. JANSEN said that in brain-abscess he was accustomed to make the incision so large that the whole abscess was laid open, and then drainage was quite easy. There were affections of the sinus which were quite circumscribed, genuine abscesses, and for their cure a free incision of the sinus was all that was required. Ligation of the jugular was, however, necessary as soon as the sinus disease had extended.

Dr. FREY referred to the danger of sinus infection as constituted by

the advance of the disease to a structure which belongs to the circulatory apparatus. The exclusion of this structure from the circulation by operation removed the danger. On that account the jugular should be attended to on the first appearance of pyæmia.

Dr. UCHERMANN, in reply, said, with reference to Dr. Alexander's criticisms of his cases, that he could point to *post-mortem* examinations in proof of the presence of real pyæmia, as well as to the results of operation. Regarding ligation, he had already said that it was only required if blood was still flowing through the vein. We were also compelled to do so if, in spite of previous interference, the pyæmia continued. He also held that bacterial and toxic absorption could be effected through lymphatic as well as through vascular channels.

NEW FACTS CONCERNING THE PROBLEM OF THE OPERATIVE OPENING OF CONGENITAL ATRESIA OF THE EXTERNAL AUDITORY MEATUS.

BY DR. E. VÁLI (Budapest).

The author attempts to show by the aid of embryology that the sound-receiving and sound-conducting apparatus develop independently of each other at different places and at different periods. He shows that in an atresia of the external sound-conducting apparatus the sound-perceiving apparatus may be quite intact, hence a decision as to operative interference is not to be influenced by the results of the examination of the hearing. Text-books have, however, till now laid great weight just on this point. The author hopes that by means of X-ray photographs it will be possible to demonstrate the position and degree of the atresia. Finally, he lays down the following indications for operation:

(1) An atresia should invariably be operated upon for prophylactic reasons quite apart from the expected improvement in the hearing—*indicatio ritualis*.

(2) As every atresia is not due to incomplete development of the tympanic plate, it is our duty to seek to open the atresia first along the normal path; if this fails we must make a passage in the mastoid process down to the tympanum. In these procedures X-ray photographs will be of value.

(3) The operation should be performed if possible at an early age.

(4) The operation is indicated in unilateral and bilateral atresia.

Dr. NEUBAUER had experimented with X-rays in the diagnosis of certain diseases of the ear, and among other cases examined was one of congenital occlusion of the meatus, in which the X-rays showed the presence of a meatus.

TRANSACTIONS OF THE SOCIETY OF GERMAN LARYNGOLOGISTS.

Seventeenth Meeting at Dresden on May 11 and 12, 1910.

President.—Prof. Dr. JURASZ, Lemberg.

Abstract permitted by Dr. F. BLUMENFELD, Wiesbaden, Secretary.

May 11.

DEMONSTRATION BY MESSRS. MANN AND HOFFMANN IN JOHANNSTADTER AND FRIEDRICHSSTÄDTER HOSPITALS IN DRESDEN.

A number of interesting preparations were demonstrated.

May 12.—Business Meeting.

Frankfort was chosen as the place for the next meeting. Profs. Killian and Seifert were selected as President and Vice-President. The B. Fränkel prize was given to Prof. Killian at the request of Prof. B. Fränkel.

Scientific Meeting.

ON THE PRINCIPLES OF INTRA-NASAL SURGERY.

By HERR L. POLYAK (Budapest).

Polyak is of the opinion that the rhinologist should attempt to complete any operative procedure on the nose or the accessory sinuses in one sitting. The tendency to divide it up into a number of sittings dates from the time when there were no efficient hæmostatics. The ambulant treatment is, however, not possible, and the patient ought to lie up; plugging is then usually unnecessary. For twelve years Polyak has made it a rule to finish the work on one side of the nose at one sitting, and for two years he has completed both sides of the nose at one sitting. During the period from May 1, 1908, to March 31, 1910, he has performed 220 nasal operations, of which 87 were unilateral and 133 bilateral. Of the 87 unilateral cases (which included 11 submucous resections of the septum) 57 were simple cases; in the remaining 30 cases combined operations were performed. The simpler operations, such as removal of hypertrophies of the inferior turbinated bodies, nasal polypi, etc., were most satisfactorily treated in this way. Cases of lupus or tuberculosis of the mucosa were more difficult, owing to the bleeding. Polyak has only made one exception to this prin-

ciple, in that he performs no other operation in the nose at the same time that he resects the septum, in case a subsequent hæmorrhage should occur requiring packing, which might endanger the weakened septum. Katz, however, considers that turbinal hypertrophies may be treated at the same time.

Polyak has completed the operation in 90 per cent. of his bilateral cases at one sitting. Hæmorrhage and tendency to syncope occasionally necessitated a postponement of part of the operation. Usually slight bleeding occurred after the action of the adrenalin had ceased, but not sufficient to require plugging.

In 20 per cent. of the cases more considerable bleeding occurred, which ceased on spraying with a 1 : 10,000 solution of adrenalin; only 5 per cent. of the cases required plugging of one or other of the nasal chambers.

In three cases the posterior nares had to be plugged. A case of bilateral hæmorrhage did not occur.

The preparation of the patient and asepsis were discussed.

Anæsthesia was produced by a 10 to 20 per cent. solution of cocaine. In more serious operations morphia was injected half an hour previous to the operation. After the operation rest in bed and frequent inspection of the pharynx, especially during the time that hæmorrhage was to be expected. Nose not to be blown for twenty-four to forty-eight hours.

Herr von EICKEN (Basel) agrees as to the necessity of laying the patient up. The best plug is the india-rubber sponge, or what is simpler, a rubber finger-stall is introduced into the nose; it is then inflated and the mouth tied up.

Herr KRETSCHMANN (Magdeburg) remarks that this principle has already been practised by Aufrecht.

Herr WINCKLER (Bremen) agrees with the principles expressed by the author of the paper. Recommends the taking of a skiagram in cases of multiple empyemata.

Herr ROSENBERG (Berlin) makes some historical references as to the use of a rubber finger-stall as a nasal plug.

Herr DENKER (Erlangen): Herr Polyak recommends the introduction of a tampon of wool at the end of the operation. D. does not use this, as he thinks the passage of air through the nose tends to assist the coagulation of the blood.

Herr KREBS (Hildesheim): In certain cases, especially hypertrophic rhinitis, a single operation is not possible. Hæmorrhages are to be avoided by recommending the patient to inspire deeply through the nose and breathe out through the mouth.

Herr KILLIAN (Freiburg) has always admitted patients to hospital, for from one to three days who are to undergo an intra-nasal operation. Operations on the inferior turbinals are almost always performed on both sides at one sitting, and after two or three applications of a solution of peroxide of hydrogen a pledget of wool is introduced into the nostril.

In other cases, also, Killian usually operates on both sides at once, but each case must be judged on its merits.

Herr RUPRECHT (Bremen): Operations in one sitting are disadvantageous from the point of view of the principle of retaining structures which may return to the normal. In operations on the tonsils without narcosis, enlargements of the turbinals can be dealt with at the same time.

Herr POLYAK (Budapest), in conclusion, remarked that the discussion showed that the general opinion on the whole agreed with his contentions. Hemorrhage was not more frequent in cases in which both sides were treated at once if the patients were admitted to hospital.

ON THE RADICAL OPERATION FOR CHRONIC EMPYEMA OF THE MAXILLARY ANTRUM UNDER LOCAL ANÆSTHESIA.

BY HERR PROF. DENKER (Erlangen).

Denker performs the radical operation after his method in the following way: Half an hour before an injection of morphia is given (0.01-0.02), cocaine solution, 10 to 20 per cent., is painted on the gums; subperiosteal injection of novocain, 1 per cent. solution, containing eighty drops suprarenin solution 1:1000. The injection is made first in an upward direction towards the supra-orbital margin, then forwards and upwards towards the piriform aperture, and finally towards the point of exit of the infra-orbital nerve. Now a pledget of wool dipped in a 10 per cent. solution of cocaine containing suprarenin is laid against the outer wall of the inferior meatus of the nose.

Ten minutes after the beginning of the infiltration the incision is made; a portion of the facial wall of the antrum the size of a sixpenny bit is removed with a chisel; the mucous membrane of the antrum, which is now exposed, is covered with a tampon of gauze dipped in a 10 per cent solution of cocaine containing suprarenin. Then from the piriform aperture a subperiosteal injection of novocain and suprarenin is made along the lateral wall of the inferior meatus of the nose (2 to 3 cm.).

The exposed portion of the mucous membrane of the antrum is then excised and a gauze pledget soaked with the 10 per cent. cocaine solution is laid in the antrum. In sensitive individuals novocain may be injected at the posterior part of the antrum. As a rule, 10 to 12 c.cm. novocain solution are injected in a unilateral operation; if it is bilateral, 20 c.cm. may be injected without risk. Denker has operated upon forty-one cases after his method, some of them being very difficult and old-standing cases, and always with a permanently successful result.

Denker's operation is better than Sturmann's endonasal operation in that better access is obtained during the operation, healing is more rapid, and the after-treatment is shorter.

Herr WASSERMANN (Munich) uses a solution of novocain and alypin as a regional anæsthetic introduced from the surface. He introduces the needle directly into the nerve within the infra-orbital foramen, he also recommends scopolamine morphine narcosis. He has modified Langenbeck's retractor by adding three sharp prongs. The soft parts are thereby better retracted.

Herr STURMANN (Berlin), in support of his own method, states that satisfactory access can be obtained from the nose; that the patients need not be admitted to hospital. He has experienced such severe hæmorrhage in operating from the canine fossa that he was unable to finish the operation.

Herr DENKER (Erlangen), in conclusion, disapproves of scopolamine narcosis. He thinks Wassermann's regional anæsthesia worthy of a trial, but it is not essential. The toxic effect which Herr Sturmann fears does not occur. Surgeons use much larger doses of novocain even in children. He does not admit the superiority of Sturmann's operation, and has not experienced uncontrollable hæmorrhage when operating by his method.

THE LINE OF INCISION IN SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

BY HERR WINCKLER (Bremen).

In those cases in which the bridge of cartilage, which is left in front after resection, causes obstruction to breathing, the incision advocated by Hajek and Menzel over the free margin of the cartilage appears to be best. A nasal speculum is not required for this. As soon as the cartilage has been exposed at one point, the remainder of the flap is easily raised by a small elevator.

If the anterior border of the cartilage is not so deviated and may be permitted to remain, Winckler then makes his incision further back and retains a bridge of cartilage. There is difficulty in separating the mucous membrane from broad crests lying close to the floor of the nose. In these cases the incision must be prolonged backwards. The mucous membrane is always retained. In cases where there is a low-lying crest a bow-shaped incision is made at once along the nasal floor, extending up along the anterior edge of the cartilage. The separation of the perichondrium and mucous membrane is certainly more difficult; it is easier if it is begun from the floor of the nose, working inwards and upwards. Winckler pushes a strip of gauze soaked in a solution of peroxide of hydrogen below the separated flap.

The advantages of Menzel's incision are: (1) Anterior deviations of the cartilage are easier to remedy; (2) no assistance is required; (3) the apposition of the edges of the wound and the insertion of stitches is rendered easier.

Herr EDM. MEYER (Berlin): The suggested incision was recommended by Mienzel independently of Hajek.

Herr KILLIAN (Freiburg) asked if Winckler removed the anterior portion of the septum in every case.

Herr WINCKLER (Bremen): The incision he described is intended for cases with crests lying well forwards and towards the floor of the nose.

Herr KILLIAN (Freiburg) lays stress on the advantage of leaving a strip of cartilage in front.

TREATMENT OF SYNECHIE OF THE NOSE.

BY HERR VON EICKEN (Basel).

There are two new methods of treating synechiæ of the nose:

(1) Submucous resection of the septum, with division of the synechiæ and plugging for a few days. The raw surface is rapidly covered with epithelium.

Siebenmann has used the second method in marked cases with the greatest success, even where the vestibule has been involved.

After a submucous resection of the septum and division of the synechiæ Thiersch flaps are laid on the raw surface. The flaps are removed from the upper arm or thigh, and are spread on gauze folded into eight to sixteen layers, and rung out of boric lotion, thus making a fairly firm plug; the external surface of the flap lies against the gauze. In four to six days the plug is removed from the nose after it has been softened by a solution of peroxide of hydrogen. The flap has meanwhile become attached. In a case of adhesion of the soft palate to the posterior pharyngeal wall this method was also successful.

Herr DENKER (Erlangen) asked what became of the flap in the nose, and if it caused crusting, etc.

Herr von EICKEN (in conclusion): No metaplasia of the transplanted skin takes place, but in some way a kind of mucous secretion is given off.

ON AN OPERATION FOR A FIBROMA SITUATED IN THE SPHENOPALATINE FOSSA.

BY HERR HANSBERG (Dortmund).

A labourer, aged sixteen, had suffered from blocking of the right side of the nose for one year, and swelling of the right malar

region ; more recently from frequent hæmorrhage from the right side of the nose. The posterior part of the right nasal cavity is filled with a red tumour, which bleeds readily when touched. The naso-pharynx is nearly filled with a rounded smooth-surfaced tumour, attached by a broad base to the side of the posterior nasal cavity. Diagnosis : Tumour springing from the spheno-palatine fossa, and sending a prolongation towards the malar region. The latter could readily be felt from the outside.

The greater part of the tumour, to the size of a small hen's egg, was removed through the anterior nasal opening with forceps. Bleeding slight. Microscopic examination showed cellular fibroma.

The idea was abandoned to remove the tumour from the spheno-palatine fossa by the natural passages, on account of the sensitiveness of the patient. Denker's operation was therefore performed. The posterior part of the mesial wall of the antrum was found to be already destroyed in great part by the tumour. After removal of the posterior and outer wall of the antrum, the tumour was easily seized by forceps and completely removed. Its insertion was found in the spheno-palatine fossa. Patient was discharged healthy ; no return after half a year.

The great value of Denker's operation was pointed out, especially in cases of tumour situated in similarly unfavourable situations ; also its superiority to other preliminary operations.

Herr HOPMANN (Cologne) sees in Herr Hansberg's remarks a confirmation of the method of completely removing naso-pharyngeal fibromata, recommended years ago by Herr Hopmann, sen. Too large prolongations of the growth should not be seized by forceps in this way.

Herr KAHLER (Vienna) : In Chiari's clinic the external operation for naso-pharyngeal fibroma is also performed. On account of the risk of bleeding, Kahler recommends Koschier's elastic ligature. Denker's operation is performed in combination with Langenbeck's incision, and with the removal, if necessary, of the whole outer wall of the nose. Prolongations to the cheek may be left alone.

Herr ZARNIKO (Hamburg) remarks that good results may be obtained by less severe operations. He recommends electrolysis, especially of vascular tumours.

Herr KÜMMEL (Heidelberg) : Cases occur which should be treated after the manner advocated by Herr Hansberg. In very vascular naso-pharyngeal tumour, when the period of immunity will not be reached for many years, that is, in patients aged from thirteen to fourteen years, a radical operation should be performed at once. Kümmel recently observed a case where there was a return accompanied by such severe bleeding that the patient died of collapse in spite of a successful operation.

Herr KILLIAN prefers the intra-nasal route where the tumour is not widespread. In the remaining cases Killian recommends Denker's method, but first seeks the vessels which enter the tumour from without.

Herr IMHOFFER (Prague) inquires as to the histological nature of the tumour.

Herr RUDOLF PAUSE (Dresden) points out from the experience of one case of the possibility of curing these tumours by a permanent ligature.

Herr DENKER shares Herr Kummel's opinion that the tumour should be removed as far as possible at its base and not in pieces. The galvano-caustic snare does not ensure bloodlessness. In one case Denker succeeded in removing the tumour at its base with a specially constructed pair of forceps after loosening it with the finger. Where there is a well-marked temporal prolongation recourse must be had to external operation.

Herr RUPRECHT (Bremen) recommends the electrolytic method with a corkscrew-shaped needle designed by himself.

Herr KUTTNER (Berlin): The electrolytic method introduced by himself and Grünbeck has proved itself of value. None of the so-called non-mutilating operations ensure against severe bleeding. In surgical treatment that method is best in which the bleeding vessels can be directly seized. The temporary resection of the jaw appears to be the most satisfactory method.

Herr HABERMANN (Graz) reports a case in which a wrong diagnosis was made owing to adenoid vegetation being superimposed on the tumour.

Herr JURASZ recommends the galvano-caustic snare. Bleeding is not to be feared even with an angio-fibroma. The snare must be used at a red heat, not at a white heat. Electrolysis is also to be recommended. It cannot be used with large tumours; it is very valuable after removal of the tumour to destroy the stump.

Herr HANSBERG (Dortmund), in conclusion: Microscopic examination showed the tumour to be a cellular fibroma. Herr Hansberg is a believer in radical operation except in the case of tumours with pedicles, with broad-based tumours even when there were adhesions, removal was carried out in one or two sittings.

ON EXOSTOSES AND MUCCOCELE OF THE FRONTAL SINUS.

BY Herr MANASSE (Strassburg i E.).

A boy, aged sixteen, complains of protrusion of and swelling over the right eye of seven months' duration. Examination showed the region of the right supra-orbital margin to be markedly bulged by a tense elastic tumour, exophthalmos, globe of eye displaced downwards and outwards. Fundus: The veins on both sides are dilated and tortuous, on the right side more than the left; right disc, fairly defined margin, but redder than left. Physiological excavation marked on both sides. Movements of the eyeball restricted in an upward direction on the right side. Pupils normal, right side $\frac{1}{20}$, left side $\frac{6}{10}$. Puncture showed the tumour to contain colourless fluid, with living ciliated epithelium. Operation under general anaesthetic. Exposure of the grey-blue tumour. The outer wall of the frontal sinus is seen to be as thin as paper and partially destroyed. On further exposure, watery fluid and

gelatinous masses were evacuated. In the sinus hard rounded ivory masses project, directed towards the middle line and the ethmoidal region. The supra-orbital margin, which is remarkably thinned out, is removed. The exostoses, which are attached to the cerebral wall of the sinus, are removed. This is a case of exostoses combined with mucocele; probably the exostoses were the primary condition. They closed the naso-frontal duct, and thus led to a formation of a mucocele.

Demonstration of another exostosis of the frontal sinus given to the author by Wolf, of Metz.

Demonstration of a third exostosis which had been attached to the infra-orbital margin of a man aged eighteen, and which had displaced the eye upwards. During its removal the antrum was opened, and was found to be healthy.

Herr von EICKEN (Basle) is of the same opinion as the author as to the relation of the mucocele to the exostosis.

Herr STURMANN (Berlin) makes further remarks on the aetiology of mucocele.

Herr KRETSCHMANN (Magdeburg) demonstrates an ivory exostosis springing from the ethmoidal region.

Herr MANASSE (Strassburg), in conclusion: Exostoses are frequently found in young individuals; this suggests congenital disposition.

SUBMUCOUS TURBINOTOMY.

BY HERR ZARNIKO (Hamburg).

In the numerous cases where the enlargement of a turbinated body is due to the size or unusual shape of the bone, the author recommends submucons resection of the turbinal bone instead of the undesirable removal of the whole structure (turbinectomy).

Description of the operation, which is carried out in the following stages: Vertical cut with the scissors at the anterior end, dividing the mucons membrane down to the bone. Elevation of the mucosa from the convex side by a suitable elevator, beginning at the incision. Division of the mucons membrane by a probe-pointed knife from within outwards. Elevation of the mucons membrane from the concave side. Breaking off and removal of the turbiinal bone as far as is necessary. Smoothing the edge of the bone and reposition of the flaps of mucons membrane. Packing only in the case of severe hæmorrhage (rarely necessary).

The operation offers a few small technical difficulties, which can, however, always be overcome.

The author has performed the operation over thirty times during the last two years, making a careful selection of his cases, and is well satisfied with the results. He considers it as a necessary adjunct to many cases of submucous resection of the septum.

Herr WINCKLER (Bremen) found Zarniko's method very useful in one case, but could not do without packing.

Herr SEIFERT (Würzburg) recommends a wedge-shaped excision of the turbinal tissues with Moure's knife, which is recommended for the removal of septal crests. If in such well-marked hyperplasia the turbinal structures are pressed within the window of the knife and cut out from behind forwards, including the corresponding portions of bone, the upper raw surface can then be pressed against the lower by suitable packing, and a diminution in size is obtained without disturbing the function of the turbinated body.

Herr RITTER (Berlin) asked if there was no danger of damaging the nasal end of the tear-duct in Zarniko's method.

Herr KILLIAN (Freiburg) recommends in certain cases the fracture of the inferior turbinated body by means of the speculum designed by himself.

Herr DENKER (Erlangen) has also tried turbinotomy where otherwise resection would have been carried out. He will report on his experiences further.

Herr ZARNIKO (Hamburg), in conclusion, has never seen damage done to the tear-duct. Here Denker's suggestion should be given further trial.

(To be continued.)

PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

January 10, 1910.

COMPLICATIONS OF ADENECTOMY.

BY M. PARREL.

The speaker mentioned as immediate mishaps, burns, breaking of instruments, and as remote complications, synechie, adenitis, latero- and retro-pharyngeal inflammations, pulmonary abscesses and lastly, generalised septicæmia. To avoid them he advised operating in Rose's position under chloride of ethyl, to abstain from hurrying, to pay attention to asepsis, and to carry out a *technique* strictly surgical.

ON THE VALUE OF VESTIBULAR NYSTAGMUS IN FORENSIC MEDICINE.

BY MM. LERMOYEZ AND HAUTANT.

The following represents one of the clinical types with which the expert aurist is most frequently confronted: A workman receives a blow on the head. He loses consciousness, yet there is no hæmorrhage from the nose or ears. After a short time the patient comes to himself; there are no cerebral troubles, but he experiences violent tinnitus in one ear and notices that he is deaf on that side. The next day, on attempting to get up, he is seized with vertigo. This form corresponds to what has been designated "concussion of the labyrinth"; it is usually brought about by hæmorrhages of the internal ear which induce irremediable lesions there. But of all auricular syndromes this is the one most frequently simulated, because it is not accompanied by any objective lesion and because it leaves an incurable malady. To detect simulation, the expert must only place reliance on the physiological examination of the two aural functions, audition and orientation. Vertigo and tinnitus, of which the patients complain, have no medico-legal value. They are subjective signs, therefore uncontrollable; besides, they are signs of irritation, by no means commensurate with the intensity of the lesions. The only signs of value are those of labyrinthine inexcitability, directly induced. Control of excitability of the anterior labyrinth is effected by acoumetric tests and that of the posterior labyrinth by nystagmus tests. But the acoumetric tests are tedious, delicate, often vague, wholly subordinated to the interpretation of the patient, and may be vitiated by a cunning malingerer. On the contrary the nystagmus tests are short, easy, precise, absolutely independent of the patient's will, and impossible of simulation. For this reason, and bearing in mind that traumatic hæmorrhages invariably involve the anterior and posterior labyrinths simultaneously, one has thought that it would be possible to control reality or feigning of deafness by means of nystagmus tests alone; to hold, for example, that a deaf person whose posterior labyrinth is excitable must equally have a similar condition of the anterior labyrinth, and consequently that he is malingering. But such a deduction is really inaccurate. The authors related two unpublished cases in which two workmen after injury to the head without fracture of the skull presented the triad—deafness, tinnitus, and vertigo. In their case the anterior labyrinth was absolutely irresponsive to all

acoumetric tests, and yet the posterior labyrinth had preserved its normal excitability. For these reasons it must be inferred :

(1) That integrity of vestibular excitability, evidenced by the caloric nystagmus test, does not justify one in concluding that deafness complained of by an injured person is feigned.

(2) The nystagmus test can only afford information exclusively on the functional condition of the posterior labyrinth.

(3) Proof of malingering or the reverse in a deaf person can only be effected by tests which directly investigate the anterior labyrinth.

M. CORNET (Châlons-sur-Marne) felt that the caloric method was destined to render the greatest services in the expert examination of workmen's injuries, because of all the signs evinced by the different methods of investigation of the labyrinth, nystagmus was perhaps the only one which could not be simulated by an intelligent and practised individual. It was, nevertheless, certain that post-traumatic lesions could in a certain degree separately involve one of the two labyrinthine segments, and consequently a slight impairment of the vestibular labyrinth, evidenced by Bárány's caloric test, would in no way invalidate the existence of a total deafness.

SIMPLIFICATION OF THE RADICAL CURE FOR MAXILLARY SINUSITIS.

By M. MOUNIER.

The speaker operates at one sitting without subsequent dressings ; he does not resect any part of the inferior turbinated body ; he makes a very small sinuso-nasal opening with his special cutting forceps, and practises no after-lavage. Traumatism is reduced to a minimum, and the patient is only laid up for a very few days.

OZENA AND BREATHING EXERCISES.

By M. ROBERT FOY.

Results were reported which had been obtained by the application of this method in ozena, and which were very encouraging. Six patients have been treated ; five were cured and one improved.

AN ENORMOUS POLYPUS OF ONE NASAL FOSSA, WITH ULCERATION OF THE SEPTUM ON THE OPPOSITE SIDE FROM COMPRESSION BY THE INFERIOR TURBINATED BODY.

By M. ROBERT LEROUX.

February 12, 1910.

M. LE MARC'HADOUR, *President*.

GALVANIC VERTIGO AND AURAL TROUBLES.

BY M. J. BABINSKI.

In several papers, the first of which was communicated to the Biological Society in 1910, the author endeavoured to show that galvanic vertigo obtained by the application of electrodes to both sides of the head was a reflex phenomenon, having for its starting-point stimulation of the labyrinth, and that aural affections could consequently be attended with modifications in galvanic vertigo, which aurists ought to turn to account.

These opinions, having been confirmed by many experimentalists—amongst others, Consoni, Tedeschi, Mann, Remak, etc.—he had thought they were definitely accepted, and he would not have felt it incumbent to return to the matter had not Lermoyez recently stated at a meeting of this Society that the galvanic vertigo test was daily losing the value which M. Babinski had attributed to it, and that aurists were in general agreement with Erb in admitting that galvanic vertigo was due to the action of the electric current on the whole encephalic mass. Such criticism emanating from a man so high an authority as Lermoyez deserves to be taken into serious consideration. He hoped, however, to demonstrate that, contrary to the assertions of his colleague and friend, the opinion which he formerly expressed was strictly correct. It seemed to him useless to point out the characters of normal galvanic vertigo, with which all were familiar. He only called attention to the chief modifications of this vertigo in pathological conditions; these are, increase in resistance, oscillations of the head, inclination and rotation, unilateral or predominating on one side, retro-pulsion taking the place of latero-pulsion.

He then submitted some patients in whom the aural examination had been practised in a thorough manner by M. Weill.

CASE I.—G——, a syphilitic attacked with incomplete deafness and equilibratory troubles, which developed rapidly during the secondary period without involvement of the middle ear, and had improved under specific treatment. The left ear was more affected than the right. Bárány's reflex with hot and cold water was absent, even after several minutes' irrigation. Galvanic vertigo,

great resistance, no inclination; left unilateral rotation with galvanic nystagmus towards the negative pole on the left side.

CASE 2.—R——. Deafness almost complete; no lesion of the middle ear. Thermic reflex with water at 15° C. Symmetrical, starting after $1\frac{1}{4}'$, manifesting itself by rotary nystagmus, with very feeble twitches in the direct position, and lasting $2\frac{1}{2}'$ if one looked for it in the extreme direction of regard. Galvanic vertigo; great resistance; no inclination.

CASE 3.—K——. Lesion of the left ear after traumatism of the left temporal region; headache; equilibratory trouble. Aërial and bone-conduction reduced about four fifths. Signs of ankylosis of the ossicles on the left side. Spontaneous nystagmus in the extreme positions of the eyes. Bárány's reflex with water at 15° C. On the left side nystagmus appeared after 45" and lasted $2\frac{1}{4}'$; on the right side it appeared in 25", lasting 40". Galvanic vertigo; with the positive pole to the right, oscillation and retro-pulsion; with the positive pole to the left, inclination and fall to the left.

CASE 4.—Occlusion of the left auditory meatus at a depth of 1 cm. Little or no hearing on the left side. Right ear normal. Bárány's reflex normal on the right; on the left it was impossible to evoke, even after ice applications and spraying with chloride of ethyl. Galvanic vertigo; with the positive pole to the right, normal inclination of the head towards the right without left nystagmus; with the positive pole to the left, inclination very slight to the left and marked nystagmus to the right.

Rotation test: With rotation in the direction of the hands of a watch, very feeble twitches to the left; with rotation in the reverse direction, nystagmus normal to the right.

These cases, which he had taken from among others of a similar nature, showed that in a general way the perturbations of galvanic vertigo and those of the thermic reflex are connected. He passed to the consideration of some unpublished experimental details. At his instigation MM. Vincent and Barré had carried out some researches on the guinea-pig which would be published later and these were the most important results. In destroying the labyrinth or dividing the eighth nerve of one side immediately after the operation, one observes an abolition of rotation on that side, whilst on the healthy side rotation continues normal. In cases of bilateral destruction galvanic rotation is abolished. Contrary to what is generally observed in man, it is on the side of the diseased end in the guinea-pig that latero-pulsion is wanting, and there lies a difference, the cause of which will require investigation.

However that may be, this fact proved that destruction of the labyrinth or division of the acoustic nerve gives rise to a profound modification of galvanic vertigo. Lastly, he had been able to appreciate some experiments in man, showing that a transient disturbance of the labyrinth occasioned by the investigations for Bárány's reflex brings about a change of galvanic vertigo equally transitory. In a healthy subject, having normal galvanic reactions, unilateral irrigation with water at 15° C. induces, as soon as nystagmus appears, a change similar to that which unilateral lesions of the posterior labyrinth give rise to: with the positive pole on the side of the cooled ear inclination remains normal, or is exaggerated; at the same time nystagmus increases in intensity; with the positive pole applied on the other side, inclination is *nil* or feeble and nystagmus ceases, to reappear after interruption of the current. These fresh details confirmed his former observations. They also corroborated this view that the reactions of galvanic vertigo afford a valuable means for revealing disorders of the posterior labyrinth or vestibular tracts.

AËROPHAGIA AND SPASMS OF THE PALATE.

BY MM. CASTEX AND DE PARREL.

The case of a patient attacked with aerophagia was related which had, owing to gastric distension, caused insomnia. This man also had rhythmical elevations of the soft palate (one hundred per minute), and if one fixed the palate it was the base of the tongue which rose. These elevations were accompanied by rhythmical clackings in the Eustachian tube and tympanum on the left side. The patient had been syphilitic for the last thirteen years. Castex has observed a very similar case in a syphilitic general paralytic. This nystagmus of the palate falls into the category of the "tics." It must not be confounded with pulsations of the pharynx which one observes in aortic insufficiency during the cardiac systole (Masset's signs).

Would it be a prodromal symptom of general paralysis, since both these patients were syphilitics? One cannot say. At all events, Castex and De Parrel recorded these two cases in the hope that, with other observations added to them, it would be easier to determine the semeiological value of this functional disorder.

CEREBRAL ABSCESS FOLLOWING PAN-SINUSITIS; OPERATION;
RECOVERY.

BY M. GUISEZ.

The author showed a patient, operated four months ago for fronto-ethmoido-sphenoidal sinusitis, with intra-cerebral abscess of the right frontal lobe. The abscess was latent, and was unattended by any symptom of compression; nevertheless, it was the size of a small hen's egg.

FOREIGN BODIES OF THE OESOPHAGUS (FISH-BONE DENTURE).

BY M. GUISEZ.

The denture was remarkable for its dimensions, and had to be removed by *morcellement*. This is the seventh denture which the author has removed under similar conditions.

The fish-bone caused an oesophageal abscess, which was easily evacuated by the natural route after removal of the foreign body. This method of drainage has certainly less chance of infecting the mediastinum than an external operation.

OZENA AND RESPIRATORY RE-EDUCATION.

BY M. ROBERT FOY.

The author showed some fresh patients cured by his method of re-education (compressed air and oxygen).

The treatment in the case of ozematous subjects seems to act by restoring the physiological stimulus, air, to the secretory elements (deodorant and bacterioid) of the nasal mucosa, just as food is necessary to the gastric and intestinal mucous membranes for the physiological secretion of their products.

DYSPHAGIA (LARYNGEAL TUBERCULOSIS) RELIEVED BY THE APPLICATION OF X-RAYS (BY THE EXTERNAL ROUTE).

BY M. GASTON POYET.

Two patients were exhibited. The author laid stress on the analgesic properties of the Röntgen rays, which had not yet been employed by the method which he described for alleviating dysphagia in certain cases of laryngeal tuberculosis.

AFFINITY BETWEEN ATROPHIC RHINITIS AND TUBERCULOSIS.

BY M. CABOUCHE.

Two patients were shown suffering from pronounced atrophic rhinitis, accompanied in the one case with lupus of the nose externally and internally, and in the other by laryngeal and pulmonary tuberculosis.

H. CLAYTON FOX, *trans.*

Abstracts.

NOSE.

Lothrop, Oliver A.—*Some Observations on the Late Results Obtained by the Submucous Resection of the Nasal Septum.* "Boston Med. and Surg. Journ.," May 12, 1910.

Out of 254 patients only fifty-nine reported two years after operation. The author concludes that the method is beneficial in almost every case, but to ensure this it must be thorough and complete. It should not be attempted until the nose has attained full development. (There were eight children in the series; five were thirteen years, the remaining three were ten, nine, and seven respectively. Results do not appear to have been good, and Lothrop thinks the depression of the tip of the nose is due, not to insufficient support from too little cartilage, but to a retarded growth of the remaining cartilage while the bony parts develop normally.)

Macleod Yearsley.

Hajek, M.—*Mucocele of the Sphenoidal Sinus causing Optic Neuritis; Operation; Cure.* "Monats. f. Ohrenh.," Year 44, No. 3.

Having with commendable brevity passed the condition of mucocele of the nasal accessory sinuses in review, Hajek draws attention to the fact that whilst it is comparatively common in the ethmoid cells and frontal sinus, there is still some dispute as to its existence in the maxillary antrum, and rhinological literature affords no example of the sphenoidal cells being affected in this manner. It is for this reason that he publishes the following account:

A married woman, aged forty-seven, consulted him on October 15, 1909, complaining of an unpleasant smell in her nose, headache, chiefly on the left side, since last July, and also from about the same time a steadily increasing loss of sight in the left eye.

Examination revealed a condition of advanced atrophic rhinitis with crusts, which itself demanded intra-nasal treatment before any further investigation could be pursued. Meanwhile an ophthalmic surgeon reported that there was optic neuritis on the left side combined with loss of all sight except mere perception of light, the right eye being normal. In addition the X-ray specialist stated that the left sphenoidal sinus "contained no air," and that under the circumstances this area should be explored as being the possible cause of the trouble.

In ten days' time the nose was sufficiently clean for further examination, and inspection disclosed the following condition: The septum is slightly deflected to the right; both inferior turbinals are markedly atrophied, the right middle turbinate body being similarly affected in its whole extent. On the left side the middle turbinal is atrophied only in its anterior part, whilst posteriorly it appears to spread out into a diffuse, quite smooth body completely shutting off the hinder portion of the olfactory cleft and engaging the septal wall. The probe, however, does not show that this tumour is distinct from either the middle turbinal or the septum, and weak adhesions can be detected in both directions. The surface appeared bony everywhere except in one spot which was elastic to pressure.

Under cocaine this soft spot was broken down with a "hook," when immediately a discharge of sero-mucous material took place about a drachm in amount.

The whole of the anterior wall of the left sphenoidal sinus, as it was then undoubtedly proved to be, was subsequently broken down. The interior appeared perfectly healthy.

The patient reported an almost simultaneous cessation of the headache from which she had continuously suffered during the past few months, and within half an hour after the operation she found she could distinguish objects with the left eye. By November 16 the optic neuritis had completely subsided and the vision of the left eye was as good as that of the right.

Hajek discusses the ætiology of the case and the manner in which the optic neuritis was produced, and concludes with a few words on the diagnostic value of radiography in sphenoidal sinus disease by quoting a note from Dr. Schüller, the X-ray specialist referred to above. "Under normal circumstances, that is, when containing air, the sphenoidal sinus appears deep black with a sharply outlined posterior boundary. Should it not contain air it stands out in strong contrast with the air-cells of the ethmoid immediately in front of it. The localisation of the disease to one or other side is determined either by associated clinical symptoms, such as neuralgia or optic neuritis confined to one side, or by an antero-posterior view in addition to that taken from the side, accompanied with elimination of the ethmoid as a possible factor in the production of the shadow (by intra-nasal inspection). These and further details on the subject are not yet published, but I hope by the end of the year to be able to make them known."

Alex. R. Tweedie.

Turner, A. Logan, and Lewis, C. J.—*A Further Study of the Bacteriology of Suppuration in the Accessory Sinuses of the Nose.* "Edinburgh Med. Journ.," April, 1910.

In this paper the authors publish the results of an investigation into the bacteriology of nasal sinus suppuration. Forty-three suppurating antra, seventeen cases in which antrum and other sinuses were involved, six frontal sinuses, one frontal mucocele, one orbital abscess, one antrum which was full of mucoid secretion, and one dental cyst formed the material investigated. The paper is too statistical to be satisfactorily abstracted. The conclusions of the authors are the following:

(1) That sinus suppuration is not caused by any one particular micro-organism.

(2) That while bacilli may cause suppuration, we think that pyogenic cocci of various kinds are more often responsible

(3) That four main types of cocci are commonly met with in sinus suppuration, viz. pneumococci, streptococci, staphylococci, and diplococci of the type of *Micrococcus catarrhalis*.

(4) That the following groups of bacilli are frequently met with in sinus suppuration: (a) *Bacillus coli* and its allies; (b) putrefactive bacteria, such as *proteus* and its allies; (c) dental organisms, such as *Bacillus gangrenæ pulpæ* and *Bacillus necrodentalis*; (d) an obligate anaërobic group, of which prominent members are *Bacillus perfringens* and *Bacillus ramosus*; (e) a diphtheroid group, and (f) *Bacillus influenzae*.

(5) That pus in a considerable number of chronic uncomplicated antral cases contains organisms of dental and buccal habitat, and that in some of these cases it is possible to isolate identical organisms from the pus and from diseased teeth extracted at the time of operation upon the sinus.

(6) That clinical and bacteriological investigations agree in showing that nasal infection of the antrum is more common than dental infection, and that probably about one third of the cases of antral suppuration are due to dental infection.

(7) That while in bilateral antral suppuration the pus from the two antra may contain the same bacteria, this is not invariably the case; we have isolated from one antrum a virulent diphtheria bacillus which was absent from the other.

(8) That in recent cases of sinus suppuration the streptococci were found virulent in 60 per cent., and in chronic cases only 30 per cent. have been proved virulent.

(9) That fœtor is the result of the growth of certain organisms, sometimes of those responsible for the suppuration, and sometimes of those concerned in the decomposition of the products of inflammation. That both aerobic and anaërobic organisms are capable of causing fœtor.

(10) That fœtor may be present in antral suppuration of very recent origin, as well as in chronic cases, and that antral cases of nasal infection, as well as those of dental infection, may be fœtid.

(11) That recent cases of maxillary sinus suppuration (duration in this series two days to three weeks) readily cure by lavage.

(12) That when lavage is practised, whether in recent or chronic cases, it should be carried out through the nasal cavity; the alveolar opening should be abandoned.

(13) That a certain proportion of chronic cases of antral suppuration are cured by lavage, but we cannot determine from the history of the case, the duration of the discharge, or the path of infection which cases may be so healed successfully.

(14) That some assistance in the choice of lavage may be obtained by a preliminary microscopical examination of the cell elements in the discharge and from a bacteriological investigation of the pus.

(15) That the value of cytological examination, however, is minimised by the fact that the inflammatory process causes more advanced changes in one part of the lining mucous membrane of the antrum than in another.

(16) That in those cases in which the discharge shows a relatively small number of lymphocytes, the prospect of cure by lavage is greater than when an excess of lymphocytes occurs (J. M. Darling).

(17) That chronic cases in which no *Streptococcus pyogenes* is found in the pus more readily respond to lavage than those in which the same organism is present.

(18) That when in chronic cases there is an excess of lymphocytes in association with the *Streptococcus pyogenes*, treatment by lavage should not be attempted.

(19) That neither inoculation experiments nor histological examination of the lining membrane of the antrum explains the apparently greater resistance of the *Streptococcus pyogenes* to treatment by lavage.

(20) That failure in treatment by lavage may possibly be due to a deficiency in the patient's protective substances to deal with the streptococcus, and that a specially prepared streptococcal vaccine might be appropriately tried in these cases.

(21) That we have no evidence that any special combination of organisms is responsible for the failure of treatment by lavage.

Arthur J. Hutchison.

Madden, F. C.—*Quiet Polypoid Sarcoma of the Nose.* "The Practitioner," March, 1910.

An interesting paper, with numerous illustrations, on a form of slowly growing sarcoma common among the Egyptian natives. This growth apparently starts as ordinary nasal polypi, which gradually become malignant, involving the entire nose and upper part of the face except the lower lip.

Macleod Yearsley.

Voss, F.—*Sarcoma of the Sphenoid (a typical clinical picture).* "St. Petersburg. med. Woch.," 1910, No. 14, S. 205.

The author reports on four cases of a very unusual type. The patients, of an age from twenty-five to forty-five, suffered from severe headaches; this was followed by the appearance of tumours in the neck high up or along the great vessels, and first on the right side. Either at this period or rather later the naso-pharynx becomes involved; the roof appears to have sunk; it has an elastic feel. In certain of the cases the hearing was affected. The facial nerve was unaffected and no other cerebral symptoms appeared. The most remarkable symptom was the intense headache. The prognosis is bad, for death ensues after about three years. In only one case was a section obtained, and the whole body of the sphenoid was converted into a tumour mass. Medical treatment is, of course, valueless, the only hope would be an early and extensive operation.

W. G. Porter.

Voislavsky and Braun.—*Squamous-celled Epithelioma of Antrum of Highmore.* "Laryngoscope," February, 1910, p. 129.

Man, aged thirty-seven, suffering from nasal polypi which were removed. Examination showed typical polypoid tissue.

Three months later, return of unilateral nasal occlusion with some hæmorrhage, marked exophthalmos, œdema and tenderness over superior maxilla. Polypi removed from middle meatus. Frontal sinus filled with pus. Antrum washed out, no pus found. X rays showed shadows in both antra.

Killian operation on frontal and ethmoidal performed. Antrum then opened through canine fossa, and found to be full of softish material "like granulation tissue." This was curetted away, and on examination proved to be squamous epithelioma. The facial wall of the antrum was found to be eroded at the operation.

Three months later removal of the superior maxilla was resolved upon and the operation was begun. The soft tissues of the cheek were found to be infiltrated, however, and the operation was not completed.

Dan McKenzie.

Campbell and Rowland (Ohio).—*Acute Pneumococcic Meningitis, with the Report of a Case Secondary to Empyema of the Frontal Sinus.* "Amer. Journ. Med. Sci.," April, 1910.

In the case here reported "the infection evidently passed to the anterior ethmoidal cell from the nose by way of the infundibulum, and thence through the foramen into the frontal sinus." The posterior wall of the sinus was eroded over a small area and the meninges infected from this point. The following points are to be regarded as characteristic of pneumococcic meningitis: (1) It is fatal in 99 per cent. of all cases; (2) the exudate is greenish-yellow and markedly cellular and fibrinous; (3) the increase in neuroglia in the sub-pia and in the cranial nerves; (4) the infiltration of the walls of the arteries with leucocytes and exudate.

Thomas Guthrie.

Freudenthal, W. (New York).—*Endocranial Complications of Nasal Origin.* "Laryngoscope," January, 1910, p. 60.

Four cases are described:

CASE 1.—Female, aged twenty-five. Acute frontal sinusitis; refused to allow removal of middle turbinal. Some weeks later purulent discharge suddenly ceased and intense headache, fever, and œdema of right eyelid supervened.

Operations.—Antrum opened. Frontal sinus opened; pus found in cellular tissue near the outer canthus; posterior wall of sinus eroded, and a subdural abscess containing 2 oz. of pus opened and drained. But symptoms persisted unrelieved. Frontal bone trephined above the sinus; pus again found not only in the subdural space, but also apparently in the substance of the frontal lobe. Death. No *post-mortem*.

CASE 2.—Male, aged twenty-five. Influenzal frontal sinusitis, with swelling and fluctuation over the affected sinus.

Operations.—Frontal sinus opened; bone above and to outer side of sinus discoloured and bloody; this removed disclosed extra-dural abscess. No pus in brain on needling. After this operation patient became semi-comatose. The wound was then opened up and the dura was found to be bulging. Needle inserted into brain struck pus at a depth of 2 cm. Abscess opened and drained. Recovery.

CASE 3.—Patient, aged nineteen, suffering from headache, serous nasal discharge, pyrexia, and general toxæmia. After some days the nasal discharge dried up, and the left upper eyelid became red and swollen, and the patient semi-comatose.

Operations.—Frontal sinus opened and found to contain pus. No improvement followed. At a second operation frontal sinus reopened; ethmoidal cells cleared out and sphenoidal sinus examined with probe. Probe found to pass far beyond limits of sphenoidal sinus into a purulent mass, ? temporo-sphenoidal abscess. Death. No *post-mortem*.

CASE 4.—Alcoholic subject with certain cerebral symptoms and nasal suppuration, relieved for a time by operation on frontal sinus and ethmoid. Symptoms recurred some weeks later, and, after a chronic course, led to death six months after the operation. The author is convinced that the fatal result was due to "regionary metastasis from the frontal and sphenoidal sinuses," but the diagnosis from other brain lesions was not established by *post-mortem*.

Dan McKenzie.

PHARYNX.

Bergh, E.—*A Case of Congenital Cyst of the Soft Palate.* "Monats. f. Obrenh.," Year 44, No. 3.

A baby boy, aged seven months, was brought to the writer on May 19, 1909, by his mother because she had noticed the day before "a white knob in his throat." For about a month previously the child had had some difficulty in breathing, his sleep had been restless, accompanied with snoring, and he had suffered from a cough varying in frequency and force (but unlike that due to whooping-cough); also food was rejected, although the contents of the stomach were not vomited, and he had no difficulty in sucking or swallowing.

On examination at first nothing abnormal was detected in his mouth or throat, but with a deep inspiration, which preceded a coughing attack, a white body came into view behind the soft palate. The patient was put under ether, and a pedunculated tumour, about the size of an almond, was removed with scissors from its attachment to the posterior aspect of the uvula.

The patient made an uninterrupted recovery, with complete cessation of the symptoms. The microscopic examination showed it to be a thin-walled cyst lined with pavement epithelium, and containing a thin fluid in which were some fine particles. There was nothing to suggest it being dermoid in origin.

Bergh considers that its pedunculated character excludes the possibility of regarding it as a "retention" cyst, and diagnoses it as one of those cysts which occur at embryological "lines of closure." He has only been able to find an account of two other such cases.

Alex. R. Tweedie.

Lothrop, O. A.—*Tonsillectomy, with Special Reference to Recent Points in Technique.* "Boston Med. and Surg. Journ.," June 2, 1910.

The writer advocates the complete excision of the tonsil with the capsule, and gives a brief sketch of the history of the operation. Deprecates complicated classification, all tonsils being very similar. Recommends the use of atropine half an hour before operation to reduce salivation. The author prefers to operate under ether anaesthesia with the patient sitting up. To check hæmorrhage, which cannot be otherwise controlled, the suturing of the facial pillars over a pledget of gauze is advised.

Macleod Yearsley.

LARYNX AND TRACHEA.

Gleitsmann (New York).—*Chordectomy for Bilateral Abductor Paralysis.* "Arch. für Laryngol.," vol. xxiii, Part I.

The unsatisfactory results hitherto recorded by those who have had experience of this operation the author is disposed to attribute to the removal of the cords not being sufficiently radical. In the case which he reports, that of a youth, aged sixteen, with bilateral abductor paralysis probably of bulbar origin, thyrotomy was performed and the cords completely removed with cutting forceps, special attention being devoted to the anterior commissure and the posterior ends, a portion of the vocal process being removed on each side. Healing was rapid, and the patient after a short time obtained a fairly good voice due to the function of the cords being taken over by the ventricular bands. This satisfactory con-

dition, however, persisted for only three weeks, after which time the respiratory difficulty began to return. This was found to be due to the development of granulation tissue at the site of the excised cords. The tissue was removed intra-laryngeally by excision and curetting, and the airway made free. The reaction from this operation passed off in two days, and the patient remained well until the end of the week, when he died after a few hours' illness from septic pneumonia. The author suggests that in order to avoid the danger of the intra-laryngeal removal of granulations, which proved fatal in this case, it might be preferable to leave the thyrotomy wound open until complete healing of the raw area has taken place.

Thomas Guthrie.

Mason, N. R., and Inglis, H. J.—*Acute Œdema of the Larynx following Etherisation for Forceps Delivery; Report of a Case.* "Boston Med. and Surg. Journ.," June 2, 1910.

The writers consider the case unique. Patient was aged twenty-five, with a family history of pulmonary tubercle. She had a moderate nasopharyngitis, which caused her much annoyance from nasal obstruction during her pregnancy. Full ether anaesthesia was induced for an hour and a half. The anaesthetic was taken badly; breathing being difficult, with cyanosis. It was followed by acute laryngeal œdema, which lasted some forty-eight hours, and was rapidly recovered from.

Macleod Yearsley.

Wishart, D. J. G. (Toronto).—*Date-Stone in Trachea.* "Canadian Journ. of Med. and Surg.," July, 1909.

Patient, male, aged four, was admitted to Sick Children's Hospital with marked symptoms of tracheal tugging and laryngeal obstruction. No direct evidence of cause of obstruction was available. Respiration having almost ceased, the trachea was opened under a general anaesthetic; but as no relief followed, curved forceps were introduced and the membrane irritated. An expulsive cough followed and a date-stone was expelled through the wound. The incision was then closed by three horse-hair sutures, a moist compress was applied, and the patient put under a steam tent. Breathing remained croupy for forty-eight hours. Then the typical rash of scarlet fever developed. The fever ran its usual course, the wound healed slowly, and the patient was discharged on the thirty-eighth day.

Price-Brown.

Gaub, Otto C., and Jackson, Chevalier.—*Bronchoscopic Aid in Thoracotomy.* "The Laryngoscope," February, 1910, p. 150.

As a result of experiments upon dogs, it was found that operations on the chest-wall and lungs are rendered more easy and less dangerous by the use of an aspirating bronchoscope passed into the bronchus of the lung operated on. During the progress of the operation a continuous stream of oxygen is made to flow down the outer tube, and after circulating through the lung returns by the inner tube. By stopping the return flow with the thumb placed upon the mouth of the tube, the pressure of gas causes inflation of the lung, while if the thumb is removed the lung becomes deflated. The authors found that pleural shock could be lessened in this way, and anticipate from the procedure a marked reduction in the case-mortality that follows opening of the thorax.

Dan McKenzie.

EAR.

Stephenson, Sydney (London).—*The Constitutional Treatment of Interstitial Keratitis.* "Polyclinic," December, 1909, p. 127.

The writer looks upon interstitial keratitis as practically incurable; he found that some cases which failed to answer to mercurials and iodides became speedily more tractable when, in addition, the extract of thyroid gland was administered. Atoxyl was also found to be beneficial when prescribed along with thyroid extract. It would be desirable to try these remedies in the corresponding disease of the internal ear.

Dan McKenzie.

MacKenzie, E. W.—*Clinical Researches on Labyrinthine Disturbance of Equilibration with Particular Reference to the General Method of Testing and to the Goniometer.* "Arch. f. Ohrenheilk.," Bd. lxxviii, Heft 3 and 4, February, 1909, p. 167.

Patients suffering from labyrinth disease were submitted before and after operation to the usual tests (Romberg's—standing on one foot with open and closed eyes; walking forward and backward with open and closed eyes, etc.), as well as to examination by means of Alexander's modified goniometer, which the author describes and figures.

The results of his investigations particularly in cases of bilateral labyrinth destruction seem to suggest that disturbances of equilibration may at times be referred to the maculae in the vestibule (of the sacculæ and utricle) rather than to the end-organs in the ampullae of the canals.

Dan McKenzie.

Urbantschitsch, Ernst.—*Head Nystagmus.* "Monats. f. Ohrenheilk.," Year 44, No. 1.

A paper relating to certain phenomena which at times may be observed in connection with lesions of the labyrinth or elicited by stimulation locally when this structure is exposed or diseased. It was read at the Eighth International Otological Congress in Budapest, August, 1909.

Three main routes, says the author, exist between the labyrinth and the cerebro-spinal system by means of its nervous connection with Deiter's nucleus: The vestibulo-nuclear, through the posterior longitudinal bundle to the oculo-motor nucleus; the vestibulo-cerebellar, through the restiform body to the cerebellum; and the vestibulo-spinal, by virtue of fibres which communicate with the ventral horns of the spinal cord.

The results of clinical observations in man bearing on this subject are referred to, and also experimental data derived from investigation of animals.

Three cases are then quoted illustrating these reactions and a detailed account given of the local condition, the circumstances under which or when these phenomena occurred or could be evoked, and the character of the reactions themselves.

The response to labyrinthine stimulation, in addition to the now well recognised ocular nystagmus, is not always limited to movements of the head, but is also shown in tremors of other parts of the body, and in diaphoresis; indeed, the more common reaction, when the patient was blindfolded, was an outbreak of perspiration, which commenced first over the head and soon, most frequently, involved the whole body; in some cases the tremors were observed in the lower extremities, whilst the effect noticed in the head took the form of similar tremors or gentle shaking.

which continued for variable periods. No constant response could be obtained in different persons, nor in the same patient did repeated tests elicit a regular reaction.

Alex. R. Tweedie.

Gradenigo, Prof. (Turin).—*The Treatment of Septic Thrombosis of the Sigmoid Sinus of Otic Origin.* "Arch. Internat. de Laryngol., d'Otol., et de Rhinol.," January and February, 1909.

This common endo-cranial complication is recognised by the characteristic pyæmic temperature, a rigor followed by quick onset of fever, which at the end of some hours may fall to normal; this may be repeated two or three times in the twenty-four hours.

Death usually takes place more or less rapidly, either by metastatic involvement of the lungs and gangrene, or by the infectious process spreading to the petrous and cavernous sinus.

When an operation is performed within twenty-four hours recovery is usual, but when later, in addition to removing the infected clot anti-streptococcic serum should be injected.

Neither the aspect of the sinus nor the presence of pulsations are much help in deciding the nature of the sinus contents.

This complication is sometimes mistaken for pneumonia—indeed, they are often present at the same time, due to the pneumococcus, especially in children.

The presence of classic ear symptoms seem to distinguish between this condition and typhoid or malaria.

Anthony McCull.

Dench, E. B. (New York).—*The Treatment of Acute Otitic Meningitis.* "Amer. Journ. Med. Sci.," February, 1910.

The writer has collected from the literature 101 cases of otitic meningitis. Of these 45 were cured and 56 died. Of those cured 34 were cases of serous meningitis, 4 were cases of circumscribed purulent meningitis with serous meningitis, 4 were cases of circumscribed purulent meningitis, and 3 were cases of diffuse purulent meningitis.

Dench himself has operated on 65 cases of otitic meningitis, in 54 of which the condition was one of circumscribed purulent pachymeningitis, and of the latter 48 recovered and 6 died. The remaining 11 were cases of general meningitis, and 3 of them, all of the serous variety, recovered. The following are the author's conclusions as to the surgical treatment of the disease:

(1) The primary focus of infection must always be removed, and at the same time any extra-dural collection of pus thoroughly evacuated.

(2) Any fistulous openings found in the outer wall of the labyrinth should be enlarged and the labyrinth drained by opening the semi-circular canal, vestibule, and cochlea.

(3) When symptoms of moderate intra-cranial pressure are present lumbar puncture should be performed to relieve it.

(4) When symptoms of severe intra-cranial pressure are present or when with moderate intra-cranial pressure lumbar puncture is negative, a decompression operation should be done, either over the temporo-sphenoidal lobe or over the cerebellum, or in both situations.

(5) If the symptoms are extremely urgent the lateral ventricle may be opened at the time of the decompression operation, otherwise it is better to wait for twenty-four hours.

(6) When the infection appears to have reached the subdural space by way of the labyrinth, steps should be taken to drain that space on the

posterior surface of the petrous in the region of the aqueductus vestibuli and aqueductus cochleæ.

Thomas Guthrie.

Turner, A. Logan.—*Two Cases of Meningitis complicating Middle-ear Suppuration, with Recovery.* "Edinburgh Med. Journ.," February, 1910.

CASE 1.—A school-boy, aged thirteen, had discharge from left ear eighteen months, but enjoyed good health until five days before his admission, when he complained of severe headache. Next day he vomited, temperature rose to 103° F., he complained of great pain in the left ear, and towards evening became drowsy. When admitted to hospital he lay on his back with legs extended, did not look ill, and answered questions readily. He complained of frontal and occipital headache.

Right Ear.—No perforation.

Left Ear.—Sour-smelling discharge in the meatus, posterior wall red, small perforation in postero-superior quadrant, mastoid tenderness, but no oedema. Slight spontaneous nystagmus on looking to left, none on looking to right. No nystagmus on looking to sound side after syringing with cold water, but nystagmus on looking to affected side after syringing with hot water.

Pain in muscles of back of neck on palpation or bending head forward, but no head retraction. No Kernig's sign.

The mastoid operation was performed on the day of admission.

The bone was vascular and soft, but no pus found; walls of sigmoid sinus healthy; some mucoid secretion in antrum.

The cerebro-spinal fluid was clear and not under tension.

Next day the boy was drowsy. There was rigidity of the muscles of the neck and well-marked Kernig's sign. He then improved; nystagmus disappeared.

A few days later, however, nystagmus to the affected side reappeared, and the boy grew drowsy again. Kernig's sign still present, leucocytosis increasing, pulse and temperature subnormal. The cerebellum was explored, but no pus found. Thereafter the boy made a rapid convalescence.

The condition was one of serous meningitis. The exploratory operation on the cerebellum drained the meninges and probably prevented the serous becoming a purulent meningitis.

CASE 2.—A boy, aged sixteen, had left otorrhœa for a number of years, but otherwise enjoyed good health. A week before admission vomiting and giddiness commenced, also headache and drowsiness, and temperature was raised. On admission he lay on his back with limbs extended; answered questions clearly; complained of slight frontal headache.

In the left ear was a polypus and fœtid discharge; tenderness over left mastoid and along left internal jugular vein; no oedema. A few jerky nystagmic movements were observed on deviating the eyes to the left; no spontaneous nystagmus on deviation to the opposite side. The caloric tests could not be applied owing to the presence of the polypus.

The radical mastoid operation was performed, and pus and cholesteatoma were found in attic and antrum. The roof of the antrum was carious, but the dura mater appeared healthy. On lumbar puncture the cerebro-spinal fluid escaped under pressure and was turbid, but no organisms could be grown from it or seen on direct films.

Two days later signs of meningitis began to become more evident.

A few days later pus was found in the cerebro-spinal fluid obtained by lumbar puncture, and in it the following organisms, viz. *Streptococcus pyogenes*, *Proteus vulgaris*, and a Gram + anaërobic bacillus—the same organisms as had been grown from the pus in the mastoid. Anti-streptococcus serum had already been injected subcutaneously; it was now injected both subcutaneously and into the spinal canal, 5 c.c. being injected one day and 10 c.c. the following day. Soon afterwards some of the symptoms began to improve, and a week later the patient was convalescent.

During the last three years twenty-one cases of meningitis complicating middle-ear suppuration have come under the writer's care; nineteen have died, and two recovered. Unless the patient is obviously moribund, surgical interference has been the routine practice. Unfortunately, as a rule, the patients are admitted too late, and surgical interference is a forlorn hope.

Arthur J. Hutchison.

Levy, Oskar (Leipzig).—*Three Otogenic Brain Abscesses*. "Arch. f. Ohrenheilk.," Bd. lxxviii, Heft 1 and 2, p. 35.

CASE 1.—Girl, aged two and a half, backward in development. Discharge, left ear. Illness began with convulsions; slight rigidity of neck followed; then paresis of left arm and leg, with continued spasms of right arm and leg, and paresis of right side of face.

Cortical mastoid operation; no extension of disease towards intracranium found, but brain explored and temporo-sphenoidal abscess discovered and evacuated. Symptoms improved for a time, but later on became worse. Wound again opened up and some retained pus in the brain let out; dural incision also enlarged and pus discharged from subdural space. Recovery, but with persistence of right-sided facial paresis.

The left-sided paresis is put down to serous meningitis of the right cerebral hemisphere (*i. e.* side of brain opposite to affected ear).

CASE 2.—Male, aged twenty. Long-standing suppuration in right ear. After ten days of headache, occasional vertigo and weakness, illness began with rigors. Temperature 38.8 F., pulse 120. Slight spontaneous nystagmus to affected side. Tenderness over jugular vein. Diagnosis—pyæmia.

Radical mastoid; large cholesteatoma; external and posterior semicircular canals eroded; dura of middle fossa exposed by the disease.

After the operation symptoms unrelieved. Coma set in. Dura of posterior fossa incised, with a negative result. Then paralysis of left arm and paresis of left leg appeared. Abscess in temporo-sphenoidal lobe found and drained. Death.

The third case is not reported in full detail. It was one of cerebellar abscess, with a tract leading from the antrum through the region of the labyrinth into the posterior fossa.

Dan McKenzie.

Nicolas, M. (Paris).—*A Case of Pyæmia of Otitic Origin, with Cerebral Abscesses*. "Rev. Hebd. de Laryngol., d'Otol., et de Rhinol.," February 6, 1909.

The patient, a boy, aged seven and a half, the subject of adenoids, had fever, earache, and bulging of the right tympanic membrane. Paracentesis was performed and the temperature became normal, but the patient became drowsy and vomited; at the same time he complained of frontal headache and intense pain in the ear. These symptoms lasted only four days; then followed a severe rigor and fever.

A fluctuating swelling then appeared at the root of the neck, close to the sterno-clavicular joint. The abscess was opened and a radical mastoid operation performed, but death occurred seventeen days later. At the autopsy were found septic thrombosis of the lateral sinus, an abscess in the right temporal lobe, and an abscess of the anterior part of the third right frontal convolution. There was broncho-pneumonia at the bases of both lungs. The abscess in the neck surrounded a thrombosed vein.

The point of chief interest was the rapid evolution of serious intracranial complications in the course of a recent otitis without notable signs. The patient, however, had torticollis on the affected side. There were no oscillations of temperature.

Chichele Nourse.

Starr, M. A. (New York).—*Tumours of the Acoustic Nerve; their Symptoms and Surgical Treatment.* "Amer. Journ. Med. Sci.," April, 1910.

The interesting and valuable paper is based upon six cases of tumour of the eighth nerve, in one of which complete recovery took place after operation by Dr. Harvey Cushing. This nerve is a starting-point of new growths more frequently than any other cranial nerve, and about as often as the cerebellum itself. The localising symptoms are divisible into three groups—namely, those referable to pressure on (1) the cranial nerves; (2) the cerebellar peduncles; (3) the tracts passing through the pons. A large majority of the tumours are fibromata, fibro-sarcomata, or cysts, encapsulated, non-adherent, and from the standpoint of the pathologist, removable surgically. In regard to the method of operation, especial importance is attached to the need for a large exposure of the cerebellum by a bilateral operation removing almost the whole occipital bone. When only one side of the occipital bone is removed, the space obtained is rarely more than two inches in diameter, and through this opening the cerebellum bulges under pressure to such a degree as to prevent access to the deeper parts. In the successful case here recorded, the patient was in no way inconvenienced by the loss of the occipital bone.

Thomas Guthrie.

Hurley, J. J. (Boston).—*Local Anæsthesia (Neumann) in Ear Surgery.* "Boston Med. and Surg. Journ.," March 24, 1910.

The author knows of only four papers on the subject in the "entire literature," thus showing that he has been very negligent in his search. The paper deals with the method and its contra-indications, technique, etc., and summarises as follows: (1) Neumann's anæsthesia fulfils all the requirements of Heidenhain and stands forth as one of the great advances of modern otology. (2) It has no design on the ether and chloroform market and desires to be on the most friendly terms with both relatives. (3) In mastoid work, when a general narcosis is contra-indicated, it needs no defence. (4) It seeks to limit the radical exenteration to those cases in which there is a strong presumption of mastoid or brain involvement. (5) It promises to do away with the chiselling out of a healthy mastoid to arrive at a chronic ear. (6) It claims the intra-tympanic field as its own. [In countries where bad technique makes general anæsthesia risky, we can understand the enthusiasm expressed over local methods. They are not, however, likely to become popular in England.]

Macleod Yearsley.

REVIEWS.

Rhinology: a Text-Book of Diseases of the Nose and the Nasal Accessory Sinuses. By P. WATSON WILLIAMS, M.D. London, New York, Bombay, and Calcutta: Longmans, Green & Co., 1910.

The appearance of the successive editions of Dr. Watson Williams's work on diseases of the upper air-passages has always been anticipated with great interest by those who started with the study of the first edition. The expansion of the section on diseases of the nose and the nasal accessory sinuses into a text-book on rhinology, such as is now before us, will be welcomed with cordiality by those who realise the progress that has been made in this section of our specialty.

One of the most important Sections is that which deals with the anatomy and physiology of the nose, and particularly of the accessory sinuses. The labyrinthine nature of these cavities almost baffles lucidity in description, but it will be admitted that Dr. Watson Williams has made it as clear as the nature of the facts will permit. Dr. Watson Williams has not contented himself with describing mere schematic arrangements, but has looked the facts fairly in the face and placed the variations before his readers. In this way the difficulties that they will meet in practice are honestly presented to them, and the directions for dealing with them are therefore all the more valuable. The descriptions are illustrated with very exceptional fulness by means of pictures, which are in many instances stereoscopic, and on which the only improvement that can be suggested is that they might be a little larger. The student will, however, find them of enormous help. The methods of examination are given in the greatest detail, and the section on the skiagraphy of the sinuses, which is largely taken from the masterly expositions of Caldwell, contains in small space the bulk of the information the rhinologist requires. The ocular and orbital complications, the importance of which is becoming continually more evident, are described mainly in the light of Onodi's recent investigations, and illustrated by the old familiar section placed before us many years ago by Holmes, of Cincinnati, whose article gave an enormous impetus to the study of the pathology of the sphenoidal sinuses. The subject of acute sinusitis is perhaps dismissed in a somewhat small space, as the condition is in the reviewer's experience one of considerable importance. In the treatment a reference might well have been made to what we believe is the routine practice, at all events among our French colleagues, namely, the inhalation of the vapour of menthol in hot water. Methods of nasal aspiration by means of apparatus might also have been more detailed, and the self-aspiration by the patient (originated by Moll, of Arnheim) is in our opinion quite worthy of consideration. The importance of the chronic suppurations is amply recognised, and it is scarcely possible to add or subtract from the author's descriptions. He takes up what we consider a very reasonable attitude with regard to both conservative and so-called radical treatment. He is not averse to the alveolar opening, which we think is still deserving of a place. He describes a simplified method of trephining instead of the more extensive Caldwell-Spicer-Lue method, which has some excellent points.

The appendix contains an extensive bibliography, but in reality the careful reader of the book will find the salient features from the different works reproduced in an exceptionally satisfying way, and at the present moment the work itself requires very little in the way of supplement.

We cordially recommend it to our readers, and we look forward with interest to the appearance of the author's companion book on laryngology.

D. G.

Leçons sur les Suppurations de l'Oreille Moyenne et des Cavités Accessoires des Fosses et leurs Complications (Lessons on Suppurations of the Middle Ear and the Accessory Cavities of the Nasal Fosse, and their Complications). By Dr. LUC. (Second revised and augmented edition, with 39 figures in the text.) Paris: J. B. Baillière et Fils, 1910.

Dr. Luc's work is pre-eminently characterised by the utmost conscientiousness, and in his modest but masterly preface to the second edition of the book now before us he shows the spirit in which the revision and extension of the work has been carried out. He is one of those who looks his failures in the face and teaches to others the lessons which these have taught him, thus making his ultimate success thoroughly deserved and his instructions peculiarly valuable. Those who appreciate this mode of thought and action will be highly gratified with the book now before us.

It originally consisted of 500 pages, but the revision has been so careful that there are only eighty-four pages more in addition. In the new matter we have of course the question of suppurative labyrinthitis, the discussion of the diagnosis of which Dr. Luc has relegated to his friend and colleague Dr. Hautant, whose monograph gave the greatest impulse to the study of what we must call the Bárány tests in France. Sub-periosteal temporal abscess independent of intra-osseous suppuration is clinically met with, as the reviewer can testify from his own experience, but from the singularly few reports of cases of the kind he ventures to think that their nature is sometimes overlooked, and he almost suspects that operations on the bone have been carried out unnecessarily on the supposition that some intra-osseous focus of suppuration was present. On this account Dr. Luc's chapter on this subject should be read with the greatest attention. He seems to have arrived independently at a course of action recommended many years ago by Gruber,¹ namely, that when the inflammatory swelling behind the ear is mainly situated above the level of the meatus, the chief incision of the counter-opening at least should be in the upper wall of the meatus.

A section has been added upon the treatment of tuberculosis of the larynx, and in this is inculcated a hopefulness which was formerly seldom entertained. The value of treatment by means of galvano-cauterisation is strongly emphasised, it being specially insisted on that it is never followed by dyspnoea even when practised in the glottis.

The other chapters of the book show ample signs of revision in the light of the author's conscientious study of the actual facts observed by him during his long and thoughtful experience.

D. G.

The Optic Nerve and the Accessory Sinuses of the Nose: a Contribution to the Study of Canalicular Neuritis and Atrophy of the Optic Nerve of Nasal Origin. By PROFESSOR A. ONODI (Budapest). Authorised translation by J. LÜCKHOFF, M.D. Edin., Ch.B. (Cape Town), with fifty illustrations. London: Baillière, Tindall & Cox, 1910.

Prof. Onodi has applied his keen power of anatomical investigation to a study of the optic nerve in relation to the accessory sinuses of

¹ "Diseases of the Ear," translated by Law, 2nd edit., p. 347.

the nose. He has been able up to the present to establish thirty-eight variations in the relationships of the optic nerves to the most posterior ethmoidal cell and the sphenoidal sinus; these can be classed in twelve groups, which are illustrated with the utmost fulness in the work before us. We should have been glad to see among these illustrations one of his very remarkable specimens of the posterior ethmoidal cell of one side extending backwards and upwards beyond the middle line so as to come into relationship with the optic nerve of the opposite side, and thus explain one of the means of origination of contra-lateral amaurosis. The anatomical conditions which permit of the production of visual disturbance and blindness as the result of disease of the accessory sinuses are considered under the following headings: (1) The bone-wall of the optic canal and of the optic sulcus; (2) dehiscence of the walls of the sinuses; (3) the semicanalis ethmoidalis; (4) the partition between individual sinuses; (5) the turbinate bone-cells. Of particular interest is Onodi's original description of the semicanalis ethmoidalis, by which in certain cases is formed the ethmoidal canal containing a vein in direct communication with the ethmoidal cells.

The references to clinical papers bearing upon these pathological relationships form an invaluable bibliography of the subject, and they are drawn from publications in all languages. In deciding as to whether in any given case the optic disturbance is due to nasal sinus suppuration, Prof. Onodi advises the utmost caution, and he reminds his readers that optic neuritis is frequently present apart from nasal suppuration, and that disease of the ethmoidal and sphenoidal cells occurs without ocular complications. Furthermore, it is to be remembered that optic neuritis frequently subsides, and that cures following nasal operations are not always effect and cause. On the other hand, he quotes numerous cases in which the relation of cause and effect seemed to be well made out. As a general rule he agrees with Mendel and Lapersonne that a one-sided optic neuritis is, broadly speaking, referable to intra-nasal disease, but there are many exceptions to it (p. 86). One very disturbing case is reported in which, after septal resection carried out from the left nostril, with removal of a portion 4 cm. long and $2\frac{1}{2}$ cm. broad, that passed backwards and upwards, a flickering sensation in the right eye with defect of vision was observed, Prof. Onodi's opinion being that in this case there was probably a fracture of the right optic canal. (Those who have carefully thought out this operation will probably agree as to the desirability of a free removal of the upper part of the osseous septum before any levering up of an enlarged maxillary crest by means of gouge and mallet is attempted.)

Among the ocular conditions more suggestive of accessory sinus suppuration appears to be a central scotoma of the visual field. Various possibilities are strongly urged for consideration (p. 98), such as "that an optic lesion may be due to accessory sinus disease, and yet the accessory sinus disease produce no visible intra-nasal suppuration. Such latent empyemata can only be revealed by operative exploration. This we are justified in undertaking in those cases in which the ophthalmic surgeon finds symptoms pointing to a possible cause in the accessory sinuses." In view of the relationship between the sphenoidal and posterior ethmoidal cells, as described by Hajek as well as by the writer, it is desirable that when one is opened the other should be opened at the same time. Thus "in those cases where the posterior ethmoidal cells lie above the sphenoidal sinuses, resection of the middle turbinate exposes the field of operation and enables the operator to 'take his bearings.'"

(The reviewer is inclined to think that the beneficial effect of this resection goes still further.)

The work concludes with a reference to the sphenoidal route for reaching the region of the sella turcica, but this subject is, we understand, to be discussed at full length in a work which Prof. Onodi has still in hand.

The difficulty of rendering a work in a foreign tongue into good English is very obvious to those who have tried it, and there is scarcely a fault to be found with Dr. Lückhoff's share in the production of the English edition of this valuable book. The author has been fortunate in having such a conscientious reviser as Dr. Lamb, of Birmingham, to see the proofs through the press, and we cordially agree with him that the publishers have been peculiarly successful in imparting to the work the handsome appearance for which the author so pointedly offers them his thanks.

D. G.

Die Syphilis der Nase, des Halses und des Ohres (Syphilis of the Nose, Throat and Ear). By P. H. GERBER. Second edition. Berlin: S. KARGER, 1910, pp. 144. Four plates in colour. Price 4 marks.

To those who aspire to an intimate working acquaintance with the protean manifestations of syphilis of the nose, throat, and ear, Gerber's skilful delineation, of which this is the second edition, may be confidently recommended. So full and clear, indeed, is the author's account that we can scarcely offer any comment upon it other than that of praise, while to select for special commendation any single section would suggest an emphasis quite out of keeping with the general even excellence of the whole. At the same time we cannot refrain from referring to the description of the rarer and more obscure lesions of the naso-pharynx and trachea, for example, as likely to prove of very special help to the practitioner.

The statistical tables on p. 60, setting forth the relative frequency of secondary and tertiary syphilis of the throat, and of its slighter and more serious lesions, form a valuable corrective to the natural errors of special experience. The throat surgeon, if led astray by his own observation, might suppose the tertiary and graver lesions of the throat to be the more common. Such, however, is not the case. Syphilis of the throat is usually so mild that the throat specialist is not called in, and secondary manifestations are of course more frequent than tertiary.

In respect to syphilis of the ear, the work is similarly complete and up-to-date. Stress is properly laid upon the marked proclivity of the labyrinth to become involved in syphilitic otitis media, whether catarrhal or purulent. In the still unsettled question of the relationship of otosclerosis to syphilis the author maintains an open mind, in view of the contradictory results obtained by Busch and by Siebenmann in the use of the Wassermann reaction.

In the important section of therapeutics not quite enough space is devoted to the detailed treatment of the more malignant and obstinate types of the disease, and we venture to express the opinion that by an enlargement of this portion, the book, so reliable and sufficient in other respects, would gain materially in value.

The coloured plates at the end of the volume are moderate in tone, and are well reproduced. A very full bibliography is appended, but we regret that the author has not followed the good example of many other recent Continental writers in supplying us with an index.

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**THE BRITISH MEDICAL ASSOCIATION MEETING IN
LONDON, 1910.**

THE leading feature of the London meeting of the British Medical Association was the activity of its scientific and workaday side, which, for once at least in the history of these annual gatherings, was not entirely overshadowed by the social aspect. In the Sections of Otology and Laryngology the intensity of life was quite on a level with that of the Congress as a whole, for not only was the attendance at the discussions unusually large and the level of the debates unusually high, but even on the final day, when, as a rule, the reaction from scientific and social excitement induces a dulling of the tone of the meeting, individual papers in both Sections gave origin to debates of considerable freshness and vigour.

On this occasion the Association formally recognised otology and laryngology as two separate sections, a proceeding which, of course, is quite in harmony with the normal evolution of medical specialism. Although officially segregated, however, the sister sciences must ever remain the closest of companions, and the unfortunate arrangement which led to their being housed under widely separated roofs proved to be a source of great inconvenience to the many members whose interests are equally divided between the two subjects. Moreover, as the President of the Otological Section pointed out, there is a considerable tract of country common

to both otology and laryngology in and around which many useful topics of discussion may be found.

Which of the topics set for discussion excited the keenest interest or aroused the most lively debate it would be difficult to say. That on the endoscopy of the upper passages, introduced by Drs. von Eicken and Paterson, was followed with close attention by a crowded audience eager to learn the latest development in the opening up of this new field of activity. In like manner the members of the Section of Otology took full advantage of their opportunity of becoming acquainted at first hand with the new labyrinth tests as expounded by Dr. Bárány, and with the operative surgery of the internal ear as described by Mr. West. Dr. Bárány's address, like that of Dr. von Eicken, was a model of lucidity, thoroughness, and good English. Of the speakers who followed those leaders in the discussions British science had no reason to feel ashamed.

Each of the Sections was given a problem to solve in the subjects of tuberculosis of the ear and vaso-motor rhinitis. In the former the striking figures produced by Dr. Milligan with regard to the frequency of the disease in children evoked considerable comment, and will doubtless stimulate further investigation, while the debate on vaso-motor rhinitis was chiefly remarkable for the warm advocacy of adrenalin and the calcium salts in the treatment of this obstinate complaint.

On the third day two papers on the anatomy and surgery of the tonsil, read before the Section of Laryngology, were made the occasion of an important debate upon the question of tonsillotomy or tonsillectomy, in which an obvious tendency was manifest in favour of the latter procedure, save in the case of simple uncomplicated hypertrophy.

For the subjects dealt with in the many other interesting papers laid before the sections our readers are referred to the abstract report of the proceedings now appearing in these columns.

The sections were under the firm and experienced guidance of Dr. E. Law and Mr. Herbert Tilley respectively, to both of whom, as well as to the secretaries of the sections, members owe a considerable debt of gratitude for the undoubted success which attended their efforts to render the London meeting an important event in the history of British otology and laryngology.

THE TREATMENT, COURSE, AND PROGNOSIS OF PURULENT DISEASES OF THE LABYRINTH.¹

BY DR. G. ALEXANDER (Vienna).

(Abridged translation by DAN McKENZIE.)

INFLAMMATORY affections of the labyrinth are classified as follows: According to their duration, into acute and chronic; according to their nature, into serous, purulent, and purulent-infective; according to their localisation in the temporal bone, into para-labyrinthitis, peri-labyrinthitis, and endo-labyrinthitis; and lastly, into circumscribed (empyema) and diffuse labyrinthitis. The circumscribed variety may be further subdivided into those cases which tend to remain circumscribed and those in which the disease tends to advance and extend. To these varieties, more or less anatomical, we must add a further division based upon clinical observation and of the utmost importance, namely, purulent labyrinthitis with a tendency to spread to the endocranium, and purulent labyrinthitis in which the disease remains limited to the labyrinth. Finally, there remain labyrinthitis with and without intra-cranial complications, and with and without fistulae of the labyrinth.

(After discussing the conservative treatment of purulent labyrinthitis the author passes on to to deal with the)—

OPERATIVE TREATMENT.

In every operation on the labyrinth we have to do with a combination of opening and of resection (ablation) of the organ.

Drainage of the cavities of the labyrinth is, no doubt, attainable by simply opening them. But the more chronic the progress of the case, and the more probable the danger of implication of the bone and of the adjoining dura mater, so much the more ought we to strive to remove, as thoroughly as possible, the petrous portion of the temporal bone, with the exception, of course, of the facial canal and facial nerve.

The following are the operations on the labyrinth:

- (1) *Opening of the labyrinth* (simple labyrinthotomy).
- (2) *Opening of the labyrinth with subsequent curettage of the labyrinth spaces.*
- (3) *Enlargement of pre-existing fistulae of the labyrinth.*
- (4) *More or less complete ablation of the labyrinth* (labyrinthectomy; resection of the temporal bone).

¹ Read at the Otological Section of the International Medical Congress at Budapest, 1909. For discussion see p. 495.

In all operations on the labyrinth, irrespective of the particular technique adopted, it is necessary—

- (1) To open up all the cavities which form the labyrinth ;
- (2) To make two openings in the bony wall of the labyrinth, one behind and one in front of the facial canal, sufficiently large to drain the labyrinth freely ;
- (3) To remove as completely as possible all the diseased bone.

Further, in all cases it is necessary—

- (4) To inspect the dura mater in the neighbourhood of the petrous bone ; that of the posterior fossa because of the possibility of a sacculus empyema, of pachymeningitis externa, or extra-dural abscess ; that of the middle fossa when there is diffuse purulent peri- or endo-labyrinthitis with fistula formation, because in this form of the disease there is a danger of pachymeningitis or extra-dural abscess set up by infection from the superior semi-circular canal.

Each operation, then, involves three steps :

- (1) Opening into the labyrinth.
- (2) Resection or extirpation of diseased bone in and about the labyrinth.
- (3) Exposure of the dura mater.

Only when we have been able to assure ourselves, by clinical examination before operation, that the petrous bone is sound and the endo-cranium healthy are we justified in limiting the operation to a simple opening of the labyrinth. In all other cases the requirements are more fitly met by a combination of opening and resecting the labyrinth—of labyrinthotomy and labyrinthectomy.

Labyrinthotomy performed according to the usual methods—from the external canal, promontory, etc.—does not, however, in any case afford us a free exposure of all the cavities of the labyrinth under satisfactory inspection, unless resection or ablation is performed at the same time. (Strictly speaking ablation of the labyrinth, as distinct from the rest of the petrous bone, can only be effected in children under the age of four years. After that age surgical ablation of the labyrinth involves the destruction of part of the petrous bone as well as of the labyrinth proper.)

OPERATIVE TECHNIQUE.

The Value of the Classical Methods of Operating.

The exploratory opening of the labyrinth, starting at the external canal, the oval window, etc., is more a diagnostic than a therapeutic

measure, and as our methods of investigating the labyrinth clinically have become more and more perfect, so this procedure, as an aid to diagnosis, has become less and less necessary.

As a therapeutic measure it is open to serious criticism. General experience has shown that the exposure and opening up of the endo-cranial structures through this circumscribed and obscure route is of no value whatever in providing drainage in cases of otitic intra-cranial complication; indeed, it actually facilitates the invasion of infective organisms. Exploratory opening of the labyrinth, then, is unnecessary when a complete and exact functional investigation of the labyrinth has been undertaken, for this investigation informs us whether ablation of the labyrinth is called for or not, and it also warns us when a patient is passing through that peculiar stage of labyrinth suppuration in which any operation, even the simple radical mastoid, is fraught with peril.

The only mode of operating upon the labyrinth which fulfils the general principles of surgery (satisfactory view of the field of operation, possibility of eradicating completely the focus of suppuration and free drainage) is a combination of opening and resection like that described by Jansen and Neumann. The only objection to the methods of these two surgeons is that with reference to the opening of the labyrinth certain hard and fast rules are laid down: according to Jansen we must penetrate into the vestibule; according to Neumann we must go as far as the internal auditory meatus. This last, however, is only called for when the suppuration in the labyrinth is associated with complications like extra-dural abscess in the posterior fossa, or cerebellar abscess. In all other cases the range of our interference should be postulated by the local conditions. And in obedience to this rule the size of the openings to be made and the amount of bone to be resected will be determined by the following circumstances:

(1) When the bone is macroscopically healthy and the suppuration manifests the characters of an empyema of the labyrinth, it is sufficient to begin the resection at the vertices of the semi-circular canals and to carry it forwards in the direction of the vestibule until the clear perilymph and endolymph can escape freely. (Sometimes the fluid spouts from the opened canal like a jet of blood from a wounded vein, at other times it wells up without any force.)

The labyrinth in this state may be likened to an inflamed lymphatic vessel or to a suppurating cranial sinus. Surgically speaking, the labyrinth is nothing but a lymphatic vessel of com-

plex anatomical structure enclosed in bone, and in our operative measures we must shut our eyes to the fact that this lymphatic vessel contains a sense-organ. We remove as much of the lymphatic as is diseased.

(2) In cases in which the bone (as well as the endo-labyrinth) is implicated in the disease (caries or necrosis of the petrous bone, caries of the bony wall of the labyrinth), the osseous labyrinth should be removed as thoroughly as possibly—back to the sigmoid sinus, and forward, if necessary, to near the carotid canal, the facial canal being spared unless the nerve is known to be irreparably damaged.

(3) When suppuration of the labyrinth is complicated with intracranial disease in the posterior fossa (cerebellar abscess, extra-dural abscess, sinus thrombosis), the semi-circular canals must be entirely removed and the vestibule opened. And, if the vestibule is found to be full of pus, the internal auditory meatus must also be freely exposed. At the same time the cochlea must be efficiently drained, and this can be most easily attained by removal of the promontory with the chisel, and by removing the stapes and enlarging the fenestra ovalis downwards and forwards. If a fistula is visible, the attack on the labyrinth may begin there. If there is no sign of fistula the author combines ablation of the labyrinth with exposure of the posterior fossa, and the best land-mark in setting out to do this is the anterior wall of the sigmoid sinus. The sinus having been exposed, the bone between it and the labyrinth is removed, then the canals are cleared out, and finally, the vestibule, and, if need be, the internal auditory meatus, are opened up. (Before proceeding to elaborate the indications for operating on the labyrinth, the author pauses to define as follows his views and procedure with regard to exposure of the cranial fossæ.)

In every case of suppuration of the labyrinth which comes to operation the dura of the middle and posterior fossæ must always be exposed.

If previous lumbar puncture has shown the cerebro-spinal fluid to be abnormal the operation is concluded with incision of the dura of the posterior fossa, and if, in the same circumstances, it is found at the operation on the labyrinth that the disease is extending towards the middle fossa, then it is advisable to incise the dura of the middle fossa as well.

To open up the labyrinth freely without at the same time laying bare the dura is a highly dangerous proceeding, as it exposes the patient to the imminent peril of post-operative meningitis.

In recommending a free exposure of the dura we are merely carrying out what is already the practice in cases of otitic extra-dural abscess or sinus thrombosis; and it is all the more necessary in labyrinth cases because the suppuration of the labyrinth is sometimes complicated with the presence of a masked or latent extra-dural abscess between the dura and the petrous bone, and to open the labyrinth without at the same time exposing the dura would render liable the extension of such an extra-dural abscess towards the brain.

If a fistula leading towards the dura is found at the operation the direction of our interference is clearly manifest; but if there is no such fistula then the region of the sacculus endo-lymphaticus should be inspected, for it is here that labyrinthogenic extra-dural abscess most commonly develops.

Once it is exposed the dura can be incised subsequent to the operation without further narcosis, if the post-operative symptoms call for such a step.

INDICATIONS FOR OPERATION.

Some cases of suppuration of the labyrinth get well without operation, others do not.

With regard to operation on the middle ear, it is to be noted that there are certain kinds of labyrinth suppuration—especially the chronic latent and hyperacute—in which even the simple radical mastoid is absolutely contra-indicated, and all we dare venture on is a very cautious conservative treatment of the middle-ear disease.

Operation on the labyrinth in purulent labyrinthitis occurring in the course of *chronic middle-ear suppuration* is called for when—

- (1) There is chronic infective peri- and endo-labyrinthitis with symptoms of intra-cranial complication.
- (2) There are signs of extension of the infective process to the capsule of the labyrinth, the petrous bone, or the internal meatus.
- (3) There is diffuse labyrinthitis along with a perforation through the bony wall of the labyrinth (fistula).
- (4) There is a cholesteatoma affecting the labyrinth.
- (5) There is chronic circumscribed peri- and endo-labyrinthitis with a fistula, along with diminished hearing on the affected side, and normal, or nearly normal, hearing in the other ear; and
- (6) In chronic circumscribed labyrinthitis with an intra-cranial lesion.

(7) In chronic circumscribed labyrinthitis which is threatening to become diffuse, an event clinically recognisable by a continuance of labyrinth symptoms.

On the other hand, in cases of definitely localised encapsuled chronic suppuration of the labyrinth, operation is not indicated.

In the first four of the above classes the labyrinth operation must be performed at the same time as the radical mastoid. The limitation of our interference to the radical mastoid alone is absolutely contra-indicated, and the same holds good with regard to operation in two *séances*. For, as a result of the unavoidable traumatism attendant upon the radical mastoid, the chronic labyrinthitis almost always passes into a fulminating, diffuse suppuration terminating in death from meningitis in a few days.

Lumbar puncture should always be practised before operating on the labyrinth, not because it exercises any decisive influence upon the indications for operation, but because it furnishes us with definite information as to the state of the meninges at the time of operation, and so protects us from reproach if meningitis appear after the operation.

On account of the intra-cranial complication, cases falling into group (1) (chronic infective peri- and endo-labyrinthitis with intra-cranial complication) must be operated on at once. But in the other groups we may defer operation so long as we are careful to refrain, in the meantime, from aught but the most cautious mental treatment. The removal of a polypus, and even such a simple manipulation as probing, may transform a latent into an acute labyrinthitis, passing on to infect the intra-cranium.

We cannot too strongly emphasise or too often repeat the warning that once operation is begun, the labyrinth as well as the middle ear must be operated on, otherwise death will almost certainly ensue from post-operative meningitis.

For the diagnosis of these cases of latent labyrinthitis we rely upon the exact methods at our disposal for testing the functions of the labyrinth.

The following are the rules for operating in *purulent labyrinthitis* following *acute or subacute suppuration of the middle ear*:

(1) Typical acute para-labyrinthitis, with the formation of a fistula on the prominence of the external semi-circular canal, gets well after simple antrotomy and operation on the labyrinth is unnecessary.

(2) Acute purulent panotitis, without any intra-cranial complications or caries of the petrous bone, will also undergo cure without operation on the labyrinth. As a rule the hearing is quite destroyed.

(3) In purulent panotitis, complicated with intra-cranial disease, immediate opening of the labyrinth and partial resection of the petrous bone are necessary.

(4) In acute circumscribed suppuration, progressive or diffuse, we refrain from operation—confining the patient to bed—until the stage of latency is reached, which is denoted by inexcitability of the vestibular apparatus, diminution in the intensity of the spontaneous nystagmus, and complete deafness. Then the radical mastoid *plus* labyrinthectomy operation is performed.

Chronic tympanogenic suppuration of the labyrinth may last for a long time. It may remain encapsuled and ultimately undergo cure. All the same, during this latent period the patient is running a serious risk, for a trifling traumatism may set up a recurrence of the acute symptoms, rapidly leading to meningitis. Or, by a more gradual process, cerebellar abscess may develop. Therefore for such cases, which from the operative point of view are by no means unfavourable, the mastoid *plus* labyrinth operation is necessary, either in the stage when all the symptoms are in abeyance, or on the first appearance of an intra-cranial complication.

Cases of chronic middle-ear suppuration with chronic circumscribed suppuration of the labyrinth are also of favourable prognosis. Many of them get well spontaneously. In others, unless the diseased portion is excised at the mastoid operation, we find that the radical operation wound heals but slowly, or not at all. In such cases the persistence of a fetid discharge after all obvious causes have been cleared away and the results of the clinical tests prove the existence of chronic suppuration of the labyrinth and the necessity for further operation.

In chronic middle-ear cholesteatoma with "concentric" fistula of the labyrinth, the internal ear must be opened so far as to permit of the free escape of the contained fluids. There is an additional danger in these cases arising from the fact that the bony outer wall of the labyrinth is frequently diseased and weakened, so that during the performance of the simple radical mastoid it is easily fractured, an accident which almost invariably leads to a diffusion of the sepsis with the immediate occurrence of purulent meningitis.

To this same group belong those cases of circumscribed chole-

teatoma of the labyrinth in which the disease has extended so slowly that sufficient time has been permitted for the shutting off of the morbid area by thick connective tissue or bone. But even in these cases the simple radical operation may occasion acute diffuse labyrinthitis and meningitis.

For the labyrinthitis which is excited by traumatism during operation the following are the rules :

Mild labyrinthitis, serous in character, or, if purulent, remaining circumscribed, such as appears now and then after the radical operation for no very obvious reason save that the bony wall of the labyrinth may have undergone some change, recovers in about a week. The hearing is frequently unimpaired, but occasionally it is destroyed, either immediately or after an interval.

On the other hand, when the post-operative labyrinthitis has been produced by an overt lesion, such as luxation of the stapes or fracture of the labyrinth wall occurring at the operation, immediate and free opening up of the labyrinth is necessary.

Finally, we come now to acute diffuse fulminating peri- and endo-labyrinthitis appearing in the course of chronic middle-ear suppuration, and not due to operative traumatism. From the point of view of treatment this variety forms a special class by itself. First of all, absolute rest in bed is essential, along with a cautious conservative treatment of the chronic suppuration in the middle ear. For many of these cases labyrinth operation is unnecessary, seeing that they get well of their own accord. But if the suppuration progresses and extends towards the intra-cranium, then we must open up the antro-tympanic space and ablate the labyrinth. But in these cases also "it is recommended unconditionally to await first of all the complete subsidence of the acute labyrinth symptoms."

In tuberculous labyrinthitis there is no indication to operate on the labyrinth unless sequestra form.

Summing up, then, we may say: In chronic labyrinthitis secondary to chronic middle-ear suppuration, the indications for operative interference consist solely in the presence of an intra-cranial complication, an extension of the disease to the bone, the formation of a fistula, or the existence of cholesteatoma of the labyrinth.

In hyperacute diffuse labyrinthitis supervening upon chronic suppuration of the middle ear, a temporising conservative line of treatment is advisable.

In labyrinthitis coming on in the course of an acute otitis media there is no need to operate on the labyrinth itself (apart from a variety which resembles meningogenic labyrinthitis).

In labyrinthitis due to operative trauma immediate operation on the labyrinth is imperative.

In chronic circumscribed labyrinthitis with a fistula the labyrinth should be freely opened up, since in any event, without any further extension of the disease, the hearing will be destroyed.

PROGNOSIS AND COURSE.

Generally speaking, the milder the onset of the labyrinthitis and the more chronic the progress so much the better is the prognosis, and *vice versa*.

As regards life, the prognosis is bad when the disease of the labyrinth is secondary to chronic suppuration of the middle ear, and still more so when it is accompanied by some intra-cranial complication. Thus the most dangerous cases are those which are suffering from hyperacute labyrinthitis secondary to chronic middle-ear disease, for this type is more often than any other complicated with meningitis.

The prognosis of uncomplicated suppuration of the labyrinth is quite favourable. In the circumscribed forms healing results now and again without any loss of function, although ultimately the function is destroyed through the action of degenerative processes. (Diffuse peri- and endo-labyrinthitis always leads to complete loss of function.) Under certain conditions the course of the disease may be very protracted, and some empyemata of the labyrinth, if completely shut off and encapsuled, persist for many months. In such cases the infectivity of the abscess dies away and the microbic content disappears, as in certain forms of nasal accessory sinus suppuration.

Spontaneous cure of cholesteatoma of the labyrinth is not impossible.

In what respect is the prognosis of endocranial complications influenced by labyrinth suppuration?

Labyrinthogenic meningitis is the least dangerous form of meningitis due to aural suppuration, and under the influence of the modern methods of diagnosis our operative results in labyrinthogenic meningitis, in extra-dural abscess of the posterior fossa, and in cerebellar abscess, have undergone considerable improvement.

The following types, however, are still very unfavourable:

(1) Meningitis from acute fulminating labyrinth suppuration secondary to chronic middle-ear disease. (The more favourable type of meningitis mentioned above supervenes upon *chronic labyrinthitis*.)

(2) Meningitis following tuberculous labyrinthitis. If tuberculous labyrinthitis is treated by operation the immediate result is good, but sooner or later tuberculous meningitis or cerebral tuberculosis kills the patient.

As a consequence of the labyrinth operation, systematically performed, a notable advance in prognosis falls to be recorded in the post-operative variety of labyrinthitis due to traumatism. In former days these cases all ended fatally, but now, when the labyrinth is freely opened and the posterior fossa exposed, the results are entirely satisfactory.

AFTER-TREATMENT.

The retro-auricular wound should be left open, since it is only by so doing that we are able to keep a watch upon the depths of the cavity in the petrous bone and to prevent the formation of recesses and anfractuositities, which sooner or later tend to become filled with pus.

In acute purulent para-labyrinthitis with fistula formation the healing of the antrotomy wound is more or less delayed.

With regard to the effect of empyema of the labyrinth upon the healing of the radical mastoid wound the following remarks may be made :

(1) Healing is unaffected if the labyrinth empyema is not associated with disease of the bone.

(2) In empyema of the labyrinth and in superficial para-labyrinthitis the inner tympanic wall remains covered with granulations for many months or indefinitely; these cases sometimes heal up spontaneously, at other times it is necessary to remove the diseased portions of the labyrinth.

(3) After the complete radical mastoid *plus* labyrinthectomy operation, the ease and rapidity of cure depend upon the success with which we have rendered the walls of the cavity smooth and uniform. For this reason those cases heal quickest in which the petrous bone is most freely resected and in which the dura mater of the middle and posterior fossae is exposed.

In conclusion, attention is drawn to the facts that the labyrinth operation is not to be regarded as trifling even by the skilled oto-

logist; that the operation, by its extensive removal of bone, weakens the stability and elasticity of the base of the skull; and that those transient inflammations which set up discharge even in soundly healed radical operation cavities are, in cases in which the labyrinth has been ablated, not free from danger to life.

THE NASO-PHARYNGEAL ORIGIN OF CHOREA.

BY DR. S. L. DE PONTIÈRE (Charleroi).

Translated by MACLEOD YEARSLEY, F.R.C.S.,
Senior Surgeon to the Royal Ear Hospital, etc.

It is exactly twelve years since I had the case of a girl, aged nine, brought by her parents to the department for diseases of the nose and throat at the Hospital of St. Peter, at Louvain. This child had been severely attacked some eight months earlier with all the symptoms of Sydenham's chorea, convulsive involuntary muscular movements of the head and limbs, ataxic contractions of the face to the point of embarrassing speech, etc. But it was not for this condition (which, as it had resisted medical treatment, was considered by her relations to be incurable) that the child came to the laryngological department; it was to put an end to the naso-pharyngeal troubles to which she had been subject for several years. This child had an exclusively buccal respiration; she snored, caught colds, had anginas and glandular attacks. The fœtid breath, morning anorexia, pain in the side, nightmares, etc., completed the tonsil-adenoid syndrome, save for ear complications. Examination—not easy, in view of her condition—revealed the presence of adenoids and tonsils with infected crypts, which I removed several days later under chloroform anaesthesia. When I saw the patient again, eight days after, it was not without some astonishment that I found a favourable change had come, not only in her naso-pharyngeal function, but especially in the evolution of her neurosis. The disordered and incessant movements of the chorea were evidently retrogressing. Already the child could rest several minutes without wriggling as before, and matters went so well without the addition of any treatment that three weeks later not the least symptom of this affection persisted, an affection which is not always transitory as some are pleased to think, nor inoffensive as observation abundantly demonstrates.

I carefully refrained from concluding from this case that the

radical treatment of chorea was either discovered or confirmed, for I was, at that time, not without knowledge of the regrettable excess into which, like most of the still young sciences, fell the rhinology which was proclaimed *urbi et orbe* by the voice of its most ardent neophytes, as putting an end to endometritis, regulating the action of the heart with inefficient valves, or re-establishing nephritic kidneys by sticking forceps or cautery into the nose. It was then the age, as M. Lermoyez recently put it, not of *nosology*, but of *nasology*. At that time I was, therefore, content to ask my colleague in the in-patient department to send me all the chronic chorea cases considered as partly incurable, which were to be found there in much greater numbers than in the otological service, and, later, to allow me to examine their naso-pharyngeal regions in my own clinic. And I hasten to state that the number of these patients who benefited by surgical treatment was considerable. If I do not give here numbers to show, according to my theory, what was the exact proportion of choreics examined, and of those who were cured by an operation, it is because I consider that statistics do not amount to much, and that it is far more interesting to know on what it is necessary to base a conclusion than to say that in 30 or 60 per cent. of cases the facts ought to turn out as expected.

For twelve years, therefore, I had had my attention drawn to the pathogenesis and treatment of chorea, and I must say, without hesitation, that I am convinced that, much more frequently than the general physician can imagine, its rapid and permanent cure, and not a passing improvement, depends upon the *surgical treatment of the naso-pharynx*.

Now, in going over the most recent papers and the most brilliant reviews on chorea, if they are all unanimous in recommending the often fallacious benefit of a therapy based on chloral, bromide, antipyrin, salicylate of soda, arsenic, etc., mingled with hygiene and various tonics, not one, I think, points out in return the possible existence even of a surgical treatment. Nevertheless, in attentively following step by step the symptomatology of what in reality is itself only a prominent symptom and not a morbid entity, to understand the chorea of Sydenham, which must not be confounded with the dance of St. Guy,¹ one cannot but be struck by the analogy which exists between the choreic person and the choreic with auto-intoxication of naso-pharyngeal origin.

¹ Our term "St. Vitus' Dance" is called by the French "the dance of St. Guy."—*Trans.*

As regards the precise origin of this last term—"the dance of St. Guy"—let this be said to satisfy the curious: Every year, in the month of May, is celebrated a festival at a chapel of St. Guy, near Ulm (an imperial city on the Danube, in the circle of Swabia), where all the fanatics of the neighbourhood dance day and night until they fall into convulsions or become ecstatic, all in honour of the Saint (G. Buchan, M.D., "Treatise on Medicine," 1802).

In a general way Sydenham's chorea, a cerebro-spinal neurosis involving the motor and psychic system, appears to us essentially unknown. One finds it most frequently at the period of the second dentition or at the approach of puberty; most often in the female sex, it shows itself especially in children of delicate or feeble constitution, and particularly in lymphatic subjects or those predisposed by their condition to disorders of innervation. Rainy and cold months and living in low and damp situations certainly favour its appearance.

The pathogenesis of chorea may be summarised in two great theories: (1) The *neurosis theory*, which seems to me less solid in reality than in appearance; (2) the *theory of rheumatic infection*, which reckons, with reason, the largest number of adherents. It goes without saying that other infections, which are not, properly speaking, of the rheumatic type, play an equally, but less frequently undeniable part. The onset of the disease is rarely sudden. It is almost always slow and gradual. Slight modifications of mind, intelligence, and mobility are very often noted. The children are less cheerful, more capricious, more impressionable. They weep easily, are quickly frightened, and seek to be alone. They are vacant, their memory is impaired, they are less apt at intellectual work; their sleep is broken, often troubled by nightmares, night-terrors, and hallucinations of sight and hearing. They grimace involuntarily, thus drawing upon themselves useless reprimands. They often complain of sensory disorders, pains, numbness of the limbs, headache, painful stitches in the side, and dyspnoea on the slightest exertion.

These are, classically, the chief symptoms presented by the choreic cases. But is this not rather to be explained in several close features by the symptomatology of an adenoid case?—the aprosexia, the disturbed nights, the lymphatic temperament, even down to this last detail given by some authors, and a certain degree of hebetude which persists in the choreic, even when he has been cured for some years. Does it not give a faithful picture of the pitiful little dunces of nasal origin?

But this analogy, thus summarised simply in its main points, luminously explains the infectious origin of chorea.

It is, however, necessary to divide the possessors of tonsils and adenoids into two main classes. In the first group come those in whom the lymphatic organs are simply hypertrophied, but *healthy*, only playing, therefore, the part of purely mechanical obstruction. In the second group, the more numerous, are classed those in whom the tonsils or adenoids, whatever be their size, are *infected*, almost continually secreting septic products, which are sniffed up, swallowed, and slowly, but surely, poison the whole economy. This chronic auto-intoxication admirably prepares the ground for producing all diseases, and particularly nerve disorders. And when one knows that common constipation produces symptoms of meningism, especially in children, there is nothing astonishing in a nervous system, habitually bathed in and nourished by a blood which carries septic principles, showing its condition of discomfort by choreiform manifestations. This equally explains the poverty of work done in the way of autopsies, or histological researches instituted with the idea of finding cerebro-spinal anatomical alterations which have been thought to be produced by chorea.

The infection, which draws its source from the naso-pharynx, may be of different kinds, but it is none the less true that it is the infection of the rheumatic type which predominates in this region, and which lurks in the tonsils and in the adenoids before giving origin to articular or visceral complications. All the erythematous and pultaceous anginas of infancy are serious warnings. It is they which, by their repetition, establish in after years the more or less accentuated, but pure, arthritic type. Everyone knows how frequently these acute anginas, rheumatic or gouty, disappear to give place to arthritis or cardiopathies. It is a no less established fact that articular rheumatism commences generally, not in the articulations, but in pharyngeal manifestations. Often, even, the rheumatism does not go beyond this region throughout the duration of a long life.

The great mistake of those who refuse to see the relation which exists between chorea and rheumatism lies in their own unreasonableness. Indeed, to exclude rheumatism, they instance the case of chorea *preceding* the rheumatic, articular, or cardiac manifestations. But who would dare seriously to pretend that every rheumatic manifestation ought, to earn this qualification, to be accompanied by these great and startling manifestations? It is as if one denied syphilis in a patient because he did not yet show the nasal

falling-in ! Are not the generality of the patients with high tension or congestions, the migrainous, of those even who simply experience lumbago or more or less painful erratic spots, etc., true arthritics ?

The influence of the eruptive fevers—scarlet fever, measles, smallpox, etc.—is often equally accused of favouring the origin of chorea. This influence is unquestionable, for the excellent reason that it is daily demonstrated that very often, after these fevers, a pharynx which was healthy before has its tissues become, and remain, infected, noticeably hypertrophied, and the case then presents all the symptoms which result from naso-pharyngeal obstruction and infection. Clinical observation, therefore, very frequently confirms the naso-pharyngeal origin of rheumatism.

A further character which contributes to show the influence of the rheumatic poison in chorea is the condition of profound and special anaemia met with in patients attacked by, or just cured of, this neurosis. Hence the habitual indication, therapeutically, of tonics, reconstituents, etc. Another point, equally drawn from therapeutics, again supports this conception ; it is the preponderance of the action of antipyrin, salicylate of soda, and colchicum, which, if they do not cure, at least unquestionably relieve in the great majority of cases, whilst bromide and chloral merely stupefy the patient without bringing real relief, if it is not the benefit which results from the loss of appetite which they provoke and which thus more or less allows the organism to get rid of the toxins with which it is so saturated.

Now if all the tonsil-adenoid cases do not start chorea (far from it), it is because, as I have already said, they are not all infected ; in the second place, because the infection of their naso-pharynges naturally may present every degree in the scale of the virulence, quality, and septicity of the microbic flora there located, and especially (and I insist upon this last point) because the *soil* is not the same in all. It is necessary, to do intelligent work, not to allow the important factor of the soil to pass, a factor which one has too great a tendency to ignore and to replace by theories and hypotheses, which are too often only seductive juxtapositions of scientific terms.

There is yet one last argument which is more eloquent than all denials or expressions of scepticism ; it is the argument of fact. If it can be interesting to know what is exactly the coccus or bacillus which intervenes to cause chorea of naso-pharyngeal origin, I consider that it is much more useful to know if one can bring about a rapid cure in a chronic choreic who withstands the

action of medicines. Now each time that I have met with one of these patients and have diagnosed in him the presence of tonsillar hypertrophy or adenoids, of which it is so easy to demonstrate the acute or *chronic* pathological condition, I have seen the cure of the chorea follow very closely the operation practised.

As it is easy to understand, it is these morbid conditions which do not belong to chorea properly speaking, and which are only the symptoms of various affections of the nerve-centres. Such are, for example, St. Guy's dance, remarkable for the violent onset of its convulsions and the intermittence of the attacks; then the disorders of motility described by Romberg under the name of "static convulsions" or "static cramps," such as irresistible tendencies to go forward (propulsive chorea), to retreat, to go to right or left, to turn round and round (rotatory chorea). These disorders, often given the name of "chorea," are not continuous, and return in attacks. They have for effect a locomotion of the patient, always in the same direction; they do not present the characters of choreic movements, and are often accompanied by cerebral symptoms. Jumping, vibrating, hammering choreas, that is to say, rocking, oscillation of the trunk or its members, are due to localised and intermittent spasms, dependent upon the same cause or allied to hysteria. In these varieties, indeed, one does not often find any indication on the side of the naso-pharynx, and investigations should be prosecuted as to the function of all the other systems in order to try and find out where the cause of the manifestations is located.

To sum up, therefore, convinced of the very great frequency of the rheumatic origin of chorea, and of the equally frequent existence of the naso-pharyngeal source of the rheumatism, applying myself to the lasting and rapid success obtained in the treatment of chorea by the surgical removal of this puerperal source of intoxication formed by the tonsils or pathological adenoids, I cannot too strongly urge my colleagues to pursue, by their researches, what can only be the confirmation of the facts which I have the honour to put forward.

SOCIETIES' PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Wednesday, July 27, 1910.

OTOLOGICAL SECTION.

DR. E. LAW, *President, in the Chair.**Abstract Report by Mr. H. KISEN.*

Dr. LAW, in opening the work of the Section, expressed great appreciation at his appointment of president, and welcomed those who came from afar to join in the work. They must congratulate themselves on having a separate section for otology, but he would like members to show more interest in the naso-pharynx, as otherwise this cavity would pass more and more into the hands of the rhinologist. Prevention was better than cure, and this could be done only by attention to the naso-pharynx. Dr. Kerr's report was of great interest as showing the importance of the sound work which was being done on the aural affections of the lower classes. Where the treatment of these cases should be done was open to discussion, but it should be carried out by specially trained members of their profession, who should be properly remunerated for their services. Aural tuberculosis was not mentioned in Dr. Macleod Yearsley's report of the ear diseases of children, and so afforded a sound subject for their first discussion. He then outlined the programme for the three days' work.

DISCUSSION ON AURAL TUBERCULOSIS IN CHILDREN.

INTRODUCED BY DR. MILLIGAN.

Dr. Milligan said that tuberculous otitis media was much commoner than was generally supposed. In his experience about 20 per cent. of hospital children under six years suffering from purulent otitis media owe the origin of the disease to underlying tuberculous infection. This percentage was based upon guinea-pig inoculation, von Pirquet's and Calmette's reactions, etc.

The route of infection might be due to blood infection, but in most cases, the speaker believed, the disease was primary and due to lymphatic infection of Waldeyer's ring spreading up to attack the middle-ear cleft.

After detailing the pathological changes characteristic of the disease Dr. Milligan dealt with the symptomatic aspect of the question, referring particularly to the quiet and insidious onset and early course, to the early occurrence of glandular enlargement and facial paralysis, and to the surprising amount of bony destruction effected by the tuberculous process. With regard to treatment, the speaker said that his aim was the total eradication of the disease by an extensive removal of the tuberculous areas, sparing, in the effort to do so, neither the internal ear nor, if facial paralysis was present, the Fallopian canal. He exposed the dura as much as possible, and rather welcomed a view of the internal carotid artery. Such extensive removal necessitated, as a rule, several operations.

In cases in which glandular enlargement was passing on to caseation he advised the administration of Koch's tuberculin "T.R." $\frac{1}{10000}$ to $\frac{1}{2000}$ mgrm.

Dr. LAW expressed the thanks of the meeting to Dr. Milligan for his masterly paper, and thought it would direct more attention to the subject. Dr. Milligan's work would help in the prevention of the scourge of tuberculosis. Pure milk and hygienic environment were especially needful.

Mr. LAKE agreed with what Dr. Milligan had said. The percentage of tuberculosis amongst the aural diseases of children was of most interest. The percentage depended on the class of hospital taken. There were three classes: (1) Children's hospitals, in which tuberculous ear disease was very common; (2) general hospitals, in which it was much less common; and (3) special hospitals, at which it was very rare indeed. He agreed that facial paralysis was a common symptom in the disease. If operation were undertaken the disease must be completely eradicated. Formalin was useful as an antiseptic and germicide.

Dr. WESTMACOTT had taken a considerable interest in the subject. He had done a large amount of work of a negative character in trying to find a way for the early diagnosis of this disease. After diagnosis ought these children to be segregated? Out of 1500 children only 30 showed tuberculous ear disease (2 per cent.). In cases under four years of age which showed aural tuberculosis, there was no tuberculosis in the viscera, but frequently in other bones and joints. He thought more attention should be paid to the action of the child in putting its hand up to its ear. In three cases he had seen aural tuberculosis develop subsequently, although at the first examination, made on account of this action, no evidence of disease was found. He thought the grey spots on the membrane were really ulcers on the mucous membrane of the tympanum seen through the membrane. A posterior superior perforation was not diagnostic of tuberculosis, but was due to the impinging of infectious material from the Eustachian tube. The rapid destruction of the mucous membrane was due to the invasion by saprophytic organisms. In thirty cases only two showed the tubercle bacillus. Streptococci and staphylococci were common, and in two the pneumococcus was found. The complete exfoliations which sometimes occurred were due to the fact that the infection occurred at sutures, lines, and centres of ossification.

Treatment: He did no formal operation, but relied on scraping to remove the disease, and found with proper after-treatment the cases did very well. Enlarged lymphatic glands were more common on the left side, probably due to infection *via* the thoracic duct. All cases ought to be treated in hospital, or, if outside, be properly attended to.

Mr. SIDNEY SCOTT said his experience depended on ten cases observed at the Evelina Hospital for Children and at St. Bartholomew's Hospital. These cases had been conclusively proved bacteriologically to be tuberculous. All but one were under four years old. The youngest submitted to operation was aged seven months. In a case discovered by chance the tympanum was filled with pale granulations, but no other bone disease was found. In one case the disease had extended into the vestibule and destroyed the cochlea. The whole disease was removed by operation. A *post-mortem* examination on this case, some years later, showed that the local disease had been completely removed at the single operation. In two cases caseating granulomata had been seen pitting the antrum, and extending into the middle fossa, compressing the temporo-sphenoidal lobe. Both cases died from miliary tuberculosis. He regarded the prognosis as favourable if radical operation were done. In one case, aged seven months, operated on three years ago, with mastoid and preauricular fistulae and tuberculous glands of the neck, and in which caseous tubercle was found in the antrum, a complete cure resulted. In this case there was no family history, but the child had been fed on cow's milk.

Mr. HUNTER TOD agreed with Dr. Milligan on all his points. Both sides being often affected in young children pointed to the infection being probably by the blood-stream. The differences of opinions on the appearances of the membrane arose from the early double infection which usually occurred. Early important signs were the appearance of granulations with a history of slight eczema and a curious smell. The absence of pus and presence of carious bone made the diagnosis of tuberculosis probable. Enlargement of the preauricular gland was important, as this never occurred in chronic suppuration from other causes. Facial paralysis was very common, and arose from the fact that tuberculous deposit occurred on the inner tympanic wall, in relation with the facial canal. Treatment: He recommended in early cases the trial of tuberculin. The presence of facial paralysis or mastoid infection made radical operation necessary. Extensive operation on the internal ear can be more easily undertaken in these than in ordinary cases. Some of the results, except with regard to the facial paralysis, are good. Tuberculous meningitis was not the commonest cause of death, but miliary and pulmonary tuberculosis.

Dr. BÁRÁNY said as there was no pathologist at his clinique, the diagnoses were made entirely on clinical experience. He had seen cholesteatomata with tuberculosis in very young children. He did not consider the presence of two or more perforations in the drum diagnostic of tuberculosis unless they were close together and in the substance of the drum. He had never seen necrosis of the promontory in children in contra-distinction to adults. Sometimes the whole labyrinth sequestered. In one case, aged nine months, he had seen a fistula of the labyrinth. In treatment he was very radical, and did not hesitate to operate twice. Sometimes the primary wound healed readily, but the case subsequently died from tuberculous meningitis. He would like to see regular medical inspection of children, but none such existed in Austria, this country being much ahead in this respect.

Dr. DUNDAS GRANT joined in the chorus of approval of Dr. Milligan's paper. He thought the more often one was on the look-out the more often one found tuberculosis of the ear in children. It was necessary to make a routine examination and detect it in an early stage. He had not much to add as to the means of diagnosis. He had found Von Pirquet's reaction quite reliable. The removal of small portions of tissue for examination was difficult, and perhaps dangerous in so small an operation area, but he had found Hartmann's small punch forceps very useful for this purpose. The antiformin method might be useful, but this was still in its infancy. The appearance of the membrane, before perforation, was as if the interior of the tympanum had been stuffed with cotton-wool. There was no intense redness of the membrane, but it was usually yellowish-grey in colour. On incision cheesy matter was found. Operative treatment was of great value, but hygienic treatment was very important. He had not used tuberculin often. Antiseptics were of some value, and he thought pyoktannin (methyl violet) was worthy of consideration.

Dr. JOBSON HORNE (London) said that whilst he would wish to be one of the first to congratulate the Section upon having obtained the services of Dr. Milligan to open the discussion upon the subject which they had under consideration, and also to congratulate Dr. Milligan himself upon the able manner in which he had endeavoured to arouse public interest in the matter of aural tuberculosis, at the same time he could not refrain from expressing some disappointment in the paper when viewed from the standpoint of the specialist. Aural tuberculosis was discussed at a largely attended meeting of aurists in the Otological Society of the United Kingdom in 1903, when the subject was introduced by Dr. Wyatt Wingrave, by himself, and also by the present introducer, Dr. Milligan. A reference to the proceedings in the *Transactions of the Otological Society* for that year would leave no room for doubt that the subject on that occasion had been most thoroughly and most usefully discussed. Whilst he (Dr. Horne) was most anxious not to be regarded as making disparaging remarks about the efforts of Dr. Milligan to bring the matter again under their consideration, at the same time he regretted that so many points of special interest had been overshadowed or crowded out by references to sanitary, public health, and agricultural items. He fully agreed with Dr. Milligan that in infant life the disease was primary in origin, or, if not primary in origin, that when it did occur, and an early diagnosis had been made, that it was primary in importance. He further agreed that when primary it not uncommonly occurred within the first twelve months of life, but he could not accept the suggestion made by Dr. Milligan that the disease was in some cases at least ante-natal in origin, and due to a maternal blood-infection. That suggestion, Dr. Horne considered, had no scientific facts to support it, and was only inflicting an additional cruelty upon human maternity. Dr. Horne reminded his listeners of the, perhaps, apocryphal incident of the scientists who had repeatedly endeavoured to produce ante-natal tuberculosis in a calf. At last they thought that they had succeeded, and history narrates how those scientists fell down and worshipped that calf. Dr. Milligan's statistics of the frequency of aural tuberculosis in hospital children under six years of age, he considered, were excessive. He (Dr. Milligan) was not sure whether it were 20, 30, or 40 per cent. of children under that age suffering from purulent otitis media that owed the origin of the disease to an underlying tuberculosis infection.

In fact, Dr. Milligan had admitted that the percentage might be somewhat high. The percentage of 2 per cent. given by Dr. Westmacott was more in accordance with the experience of Dr. Horne. However, Dr. Milligan's statement would doubtless be of service in arousing public interest in the matter, and he (Dr. Horne) was fully in agreement with Dr. Milligan that the ravages of tuberculosis of the ear amongst infants were far more extensive than was commonly realised. Dr. Horne would go further than that, and would state that primary tuberculosis of the ear in children was far more frequent relatively, and far more disastrous absolutely, than tuberculosis of that organ when secondary to hopeless cases of pulmonary phthisis, associated with cavitation of the lungs, in adults. Reliable statistics could be based only upon cases in which the diagnosis had been conclusively established, either by detecting the tubercle bacillus in the tissue or in the discharge, or by reproducing the disease by animal experiment. He (Dr. Horne), in his paper introducing the subject in 1903, had gone so fully into the difficulties in detecting the tubercle bacillus in these cases, and also into the confusion arising from the presence of acid-fast bacilli other than those of tubercle, that he felt he need not repeat his remarks. However, he would point out that owing to the susceptibility of guinea-pigs to tuberculosis, especially when in confinement for experimental purposes, it was advisable to inoculate two guinea-pigs from the same case, in order that one might be a control against the vitiation of the experiment by the death of the other from tuberculosis acquired from some other cause than the inoculated material. However, for practical clinical purposes the disease presented a set of symptoms which, taken together, would justify one in arriving at a diagnosis of tuberculosis and acting accordingly, although, from the standpoint of the scientist, such cases should not be placed in the same category for statistical purposes as those in which the diagnosis of the disease had been conclusively established by finding the bacillus. Every case of aural tuberculosis sooner or later became purulent, but purulent ear disease, even in a person the subject of tuberculosis in some other part of the body, was not necessarily tuberculous in origin. In discussing the causation of the disease he would not detain them by repeating what he had written some years ago about the part played by the adenoid tissue in the naso-pharynx, which he had spoken of as a "half-way house," and about the rôle of the lymphatic glands, which he had described as potential lines of defence and also as potential paths of general invasion. He would, however, remind them that in 1903 he had summed up the conclusions which he had arrived at from clinical and *post-mortem* observations to the effect that, in his opinion, it was a question whether tuberculosis of the ear in child-life should be regarded strictly as a form of middle-ear disease in precisely the same sense as other forms of suppurative otitis, or whether it should not more properly be grouped under the tuberculous diseases of bone. All the clinical evidence—and more than a quarter of a century ago it was pointed out that facial paralysis in a child might be the first clue to tuberculous disease of the ear—supported the view that the disease had a deep-seated origin in the bone, and the extensive ravages found already to have been made by the disease when a case was first brought under observation confirmed that opinion. At the time of operating he had found the temporal bone completely gutted, the contents a pulsatious mass, the party walls alone left standing, and the long-suffering dura mater on the point of falling in. The mortality from this disease in infant life was appalling. He therefore submitted that any reference to

unspeakable symptoms in the ear by an infant should not be passed over lightly, even when upon examination no objective sign could be detected. Dr. Horne suggested that the development of radiography might come to their assistance in detecting a deep-seated deposition of tubercle in the bone at a time when surgical intervention would yield more happy results.

Mr. MARK HOVELL agreed that the question of the cow was of great importance. Prevention was better than cure. He quoted a case to support this point. Notification was very important.

Mr. WEST was staggered by Dr. Milligan's figures. At St. Bartholomew's Hospital nothing like such frequency was found. Aural tuberculosis was a progressive disease, and ultimately bound to come to operation. Two types of tuberculosis of the ear were seen in children: (1) Caries of the temporal bone; (2) infection spreading up the Eustachian tube and then backwards. He doubted the theory of the tubercle bacilli passing up the Eustachian tube from the naso-pharynx. Fifty per cent. of the professed tuberculous cases had died within two years of meningitis, sometimes this being part of a miliary tuberculosis. This infection occurred in two ways: (1) By blood infection from elsewhere, the ear being dry; (2) progressive through the labyrinth and subarachnoid space.

Dr. MILLIGAN, in reply, thanked the meeting for the kind way in which his paper had been received. He was aware that his figures would be challenged, but he maintained they were correct. There was a unanimous opinion to operate widely; he had given up curetting years ago. He had seen several cases of cholesteatoma with tuberculosis. He thought septic meningitis often concluded the history of these cases.

MASTOID RADIOGRAPHY.

BY DR. BIRKETT.

Dr. BIRKETT gave an interesting demonstration of radiograms of the mastoid region. The method of taking the photographs was as follows: The patient was placed with his head on a pillow, at an inclination of 25° . The ear was in direct contact with the plate, and the auricle was drawn well forward to avoid a shadow on the plate. The rays were applied over the opposite parietal eminence, an exposure of five seconds being given.

The healthy mastoid cells were easily seen in contra-distinction to the diseased condition, when an opaque mass could only be seen.

The groove of the lateral sinus was easily seen in all cases; in many the sutures could be seen. In one case of a child the semi-circular canals were visible, and in one the exposure of the lateral sinuses was predicted before, and verified by, operation.

Thursday, July 28, 1910.

DR. LAW, *President, in the Chair.*

Abstract Report by Dr. DAN MCKENZIE.

THE DIAGNOSIS AND TREATMENT OF INFECTIVE LABYRINTHITIS.

DISCUSSION OPENED BY DOCENT DR. ROBERT BÁRÁNY
(Vienna) and MR. C. E. WEST.

Dr. R. BÁRÁNY, dealing with the diagnosis, said that inasmuch as the diagnosis largely depends upon the condition of the vestibular sense, it was in former times impossible to be certain of the existence of labyrinth suppuration.

Infective labyrinthitis was divided into acute, subacute, or latent, according to the character of the symptoms. The latent variety was further subdivided according as the membranous labyrinth was intact and its sense normal, partially impaired, or markedly impaired.

The manner of eliciting spontaneous nystagmus was described, and a demonstration given of the labyrinth tests.

The speaker said that the caloric was of more value than the rotatory test. In cerebellar tumour it had been found that the caloric reaction was accelerated. He expressed himself as opposed to the views of Dr. E. W. Mackenzie on the value of the galvanic nystagmus reaction, because the galvanic current irritated the nerve-trunk as well as the end-organ, and could induce nystagmus after the labyrinth was destroyed.

In order to elicit the fistula symptom the examiner should stand in front of the patient and alternately compress and aspirate the air-bag connected with the meatus.

The tests of equilibration are useful in distinguishing labyrinthine from cerebellar disease. In the former the patient tends to fall in a direction opposite to the direction of the nystagmus; in the latter there is no relationship between the direction of the nystagmus and that of the fall. Further, in disease of the labyrinth, altering the position of the head alters the direction of the fall; in disease of the cerebellum this is absent.

It is worthy of note that tinnitus frequently persists after operative ablation of the labyrinth.

The vestibular tests are not sufficiently delicate to enable us to diagnose trifling disease of the labyrinth. Vertigo is not infre-

quently severe, although the interference with the labyrinth is but slight. In neurasthenia and hysteria the vertigo exceeds the nystagmus in duration.

In the latent stage of infective labyrinthitis symptoms are in abeyance, but the disease is diagnosed by the absence of the caloric reaction.

In cases with labyrinth fistula symptoms may be entirely absent, with the possible exception of some dizziness in the morning. The first reaction reduced is the caloric, and this, the speaker supposed, may be due to the lymph having become thicker. During this time the fistula symptom is present. Next, the nystagmus, after rotation, is lost, and finally the fistula symptom disappears. If the caloric reaction is normal in a fistula case the fistula reaction is very strong.

It is not known whether serous labyrinthitis is toxic or infective. The diagnosis of this type of the disease is difficult, and we only presume its existence by the recovery of the patient.

Labyrinthitis combined with cerebellar abscess may be easy to diagnose, as, for example, when there is spontaneous nystagmus to the affected side combined with an absence of the caloric reaction. If there is pyrexia, meningitis is indicated; if pyrexia is absent, cerebellar abscess is indicated. But in cerebellar abscess the spontaneous nystagmus is sometimes directed towards the opposite side, so that immediate diagnosis is impossible. If the spontaneous nystagmus undergoes rapid decline it is due to labyrinthitis; if it persists unaltered for several days it is due to cerebellar disease. Indeed, if strong spontaneous nystagmus remains unchanged for twenty-four hours it arises from an intra-cranial lesion, and if there is aurial suppuration this lesion is abscess.

Mr. C. E. WEST spoke on treatment. In acute diffuse labyrinthitis operation is called for in order to avoid death or the occurrence of chronic infective labyrinthitis; 50 per cent. of cases of abscess of the cerebellum are due to disease of the labyrinth, and in like manner the great majority of cases of otitic meningitis are labyrinthogenic.

Free drainage of the labyrinth is obtained by opening the vestibule freely. The subarachnoid space and the canal of the facial nerve should be avoided, unless the infection has reached the meninges or brain.

In chronic infective labyrinthitis (latent) the radical mastoid is insufficient, and in these cases the risk of meningitis is greater if the labyrinth is not opened up.

In local labyrinthitis the disease is confined to the external semi-circular canal. The function of the labyrinth is intact, and can be preserved. For this reason destructive operations on the labyrinth should be avoided, and simple curetting is all that is necessary. In such cases an early radical mastoid is called for, because of the danger of the general labyrinth cavity becoming affected.

In the operation for drainage of the labyrinth, superior should be combined with inferior vestibulotomy.

The speaker described the operation in detail. The vestibule is exposed by removing the cap of the promontory by means of a fine gouge. The interior of the vestibule is gently curetted and swabbed out with a strong antiseptic. Rough curetting should be avoided. It is not necessary to curette the ampullæ. The ridge of bone projecting from the roof of the vestibule should be cut away. If the operation cavity is to be grafted, the graft should be applied to the parts away from the labyrinth.

The speaker further said that he operates on tuberculous labyrinthitis. Nine-tenths of the cases of labyrinthitis are due to cholesteatoma.

The PRESIDENT expressed the thanks of the Section to the leaders of the discussion, especially referring to Dr. Bárány, the great pioneer in the diagnosis of disease of the labyrinth.

Mr. SIDNEY SCOTT, after a similar expression of his warm appreciation of Dr. Bárány's reliability, modesty, and scientific successes, went on to remark that patients varied considerably with respect to their response to the vestibular tests. In some the reaction was very violent, and unpleasant after-effects resulted. The caloric nystagmus, he had found, was often anticipated by forced body-movements. The galvanic test might be used with impunity if the following plan was followed: The patient stands with his feet close together, or with one in advance of the other, while a current of from 2-4 milliampères is passed through the ears. This current is too slight to cause any discomfort. The patient remains erect, and any deviation of the body to one or other side is noted. Sometimes, when the caloric reaction and the fistula sign are negative, and when rotation is uncertain, the galvanic reaction is positive, perhaps because the vestibular cells are not destroyed, for in cerebellar tumour when the nerve-trunk is destroyed from within outwards it is negative. The symptoms of serous labyrinthitis may be produced by disease of the ampullary nerves in the outer wall of the labyrinth. He had seen twelve cases with the fistula sign; one had a fistula in the foramen ovale, the others in the external semi-circular canal. Mr. Scott concluded with a cinematograph demonstration of vestibular nystagmus.

Dr. ALBERT GRAY asked whether tinnitus still persisted after destruction of the cochlea on both sides. Was tinnitus, then, due to disease of the central nervous system? He asked Mr. West whether he had observed any symptoms after inferior vestibulotomy referable to destruction of the tympanic plexus.

Dr. DAN McKENZIE associated himself with the compliments which had been paid to Dr. Bárány for his work on the labyrinth, work which would probably obtain an even wider recognition in general medicine and in neurology than in otology. Turning to the diagnostic section of the subject under discussion, the speaker warned the members against relying upon spontaneous nystagmus as, in itself, a localising sign of any weight. The chief value of spontaneous nystagmus lay in the fact that, like vertigo, it was a danger-signal—an indication that the vestibular tests should be resorted to in order to establish the cause of the spontaneous nystagmus. Struck by Dr. Bárány's scientific method of measuring rotation nystagmus the speaker had devised a method of estimating the activity of the vestibular sense by means of the caloric test, using water of a standard temperature (22° – 24° C.) and measuring the induction period. The results had been reported, and had shown that this modification of the test was not without value and interest. At the same time he thought that too much refinement and elaboration in the diagnostic measures were unnecessary. The simple rotation and caloric tests, even if not measured, were sufficient in most cases of infective labyrinthitis to disclose the state of the vestibular sense. By the measurement of the induction-period of nystagmus he had found that a shortening of time indicated a hypersensitive state of the vestibular system, such as was found in neurasthenic conditions. In using his modification of the caloric test he calculated the time from the beginning of douching until the first distinct deviation of the eyeballs was observed. A little practice soon enabled one to recognise the first deviation. He did not place much reliance upon the duration of caloric nystagmus, because the cooling of the meatus lasted a longer or shorter time according to atmospheric saturation, temperature, and other uncontrollable factors. A source of difficulty in the diagnosis of infective labyrinthitis was alluded to. In chronic middle-ear disease of long standing the vestibular reactions were frequently impaired or absent. If in such a case suppuration supervened, the absence of a vestibular reaction might be erroneously attributed to purulent labyrinthitis. If only one ear was the seat of suppuration, in these circumstances the negative reaction in the other ear would, however, prevent such an error being made. With regard to treatment, he had hoped to hear more definite information concerning the indications for operation—an aspect of the work which had recently been thoroughly dealt with by Alexander of Vienna. Attention was drawn to the contrast between the conservative mode of operating practised by Mr. West and other English surgeons, and the extensive exposure of the dura which was recommended by Neumann and Alexander in order to forestall the occurrence of meningitis.

Dr. DUNDAS GRANT associated himself with the President in finding the subject of nystagmus, in relation to disease of the labyrinth, a complicated one. He had introduced the rotation tests first for the diagnosis of defective development of the internal ear in cases of supposed congenital deaf-mutism. In his clinic, where he had the advantage of Dr. Dan McKenzie's assistance and co-operation, Dr. McKenzie had found normal rotatory nystagmus in some cases of hysterical nerve-deafness. With respect to the frequency of the incidence of meningitis of labyrinthine origin subsequent to chronic suppurative disease of the middle ear and temporal bone in which the radical mastoid operation had been performed, Dr. Grant thought the differences in the experience of different observers very striking. Messrs. West and Scott seemed to him to have had an exceptionally high percentage, especially when we considered the extreme

rarity of its occurrence at the Central London Throat and Ear Hospital, where for many years large numbers of radical mastoid operations had been carried out. No doubt there must have been involvement of the labyrinth in numerous instances, but they appear to have subsided after the mastoid operation and not to have led to meningitis. He admitted the possibility that cases of labyrinthine suppuration might find their way to general rather than special hospitals, but he believed that Mr. Hunter Tod had found them very rare at the London Hospital. In any case Messrs. West and Scott's experience had been of the utmost value, and British aurists, especially the older of us, were much indebted to them for having so enthusiastically worked up the methods of investigation devised and elaborated by Dr. Bárány. Dr. Grant thought Mr. West had left one point still uncertain, namely, the diagnosis of the serous form of labyrinthitis, which he stated could only be recognised by its subsiding and ending in recovery. An operation on the labyrinth would in some of these cases destroy the hearing unnecessarily. No doubt there were some symptoms or shades of symptoms beyond those mentioned which Mr. West would recognise and by which he would be guided.

Mr. HUNTER TOD expressed himself as anxious to hear when cases of purulent labyrinthitis should be operated on. He was of opinion that the disease was rarer than it was thought to be. In three years 402 radical mastoid operations had been performed at his clinique, and in only one of the fatal cases was pus seen in the internal auditory neatus. Thus the danger of labyrinth suppuration ending in death was remote. Regarding operation, he followed the procedure recommended by Mr. West. He found that removal of the mastoid tip and excavation of the meatal wall gave a very free exposure of the promontory.

Dr. SYME asked how it was possible to differentiate between infective labyrinthitis and non-suppurative degeneration of the labyrinth.

Dr. BÁRÁNY, in reply, said that tinnitus was undoubtedly central in origin in certain cases. For example, in a case under his care, suffering from vertigo, nystagmus, and tinnitus with every movement of the head, syringing the sound ear caused tinnitus referred to the affected ear. Measuring the induction-period of nystagmus he had found to be a matter of great difficulty, because it was hard to determine the exact moment when the movements began. Even in the caloric test the duration of the nystagmus should be measured as well as the induction period, because the nystagmus depended upon the condition of the labyrinth. Regarding the frequency and necessity of labyrinth operations, the Vienna statistics showed that they had had 490 labyrinth operations in four years, and during the same period they had operated on the ear 2600 times. Only two deaths were directly due to the operation. The labyrinth operation was called for in diffuse labyrinthitis, acute, subacute, or latent. In fistula cases it was difficult to make a general rule. Every case should be treated on its merits. A fistula could heal without any operation on the labyrinth. In one of his cases of fistula vertigo was very severe, and was associated with pallor and vomiting. A general anaesthetic was prohibited by the existence of heart disease, and so the operation was performed under local anaesthesia. The result was striking. The moment the labyrinth was opened the patient declared that the vertigo disappeared. In working people, in whom a fistula was present and vertigo was severe, operation was called for. Fistula through the oval window was the most dangerous. In such cases the radical mastoid operation was liable to be followed by meningitis. For that reason the labyrinth should be opened even if the hearing had

not been destroyed by the disease. If, during the mastoid operation, the stapes was displaced or removed, the labyrinth should be opened. If the operator could not be sure that this accident had happened he should watch for labyrinth symptoms and operate on the labyrinth the moment they appeared. He thought that Mr. West's double vestibulotomy was a good operation and might prove to be useful at times. The Viennese method of removing the whole of the posterior wall of the petrous, however, was necessary in suspected disease of the posterior fossa. Simple vestibulotomy would not, of course, reveal a latent abscess in the posterior fossa.

Mr. C. E. WEST, in reply, said, regarding the Vienna mode of exposing the dura of the posterior fossa, that meningitis was really only a remote contingency of labyrinth operations, and if it did occur he drained through the internal meatus. He did not favour a wide exposure of the dura. Labyrinth operation was, he thought, indicated in general infective labyrinthitis, and when vertigo after the radical mastoid caused continued incapacity for work. In reply to Mr. Hunter Tod and Dr. Dundas Grant, he held that labyrinthitis could not be excluded unless a histological examination was made, and in this Mr. Sidney Scott agreed. In order to expose the promontory, he had found that free removal of the posterior meatal wall was quite sufficient.

The PRESIDENT, in conclusion, said that the names of Jansen, Bárány, Scott, and West would be linked together as the pioneers of labyrinth surgery, just as Wilde, Schwartz, Macewen, Stacke, and Ballance were the protagonists of the surgery of the mastoid.

(To be continued.)

BRITISH MEDICAL ASSOCIATION.

Meeting in London, Wednesday, July 27, 1910.

SECTION OF LARYNGOLOGY.

Mr. H. TILLEY, *President, in the Chair.*

Abstract Report by Drs. DAN MCKENZIE and HAROLD KISCH.

The PRESIDENT, in his opening remarks, made a sympathetic reference to the loss laryngology had sustained in the death of Mr. Cresswell Baber. Among the visitors to the Section he welcomed Drs. von Eicken, Luc, Bryan of New York, and H. S. Birket of Montreal.

Passing to more technical matters, the speaker first of all gave a brief *résumé* of the progress laryngology had made since its elevation to the ranks of a speciality, then he mentioned one or two of the more recent developments of the science, alluding more particularly to the subjects of bronchoscopy and œsophagoscopy,

and of tonsil emuclation. Attention was drawn, in a few brief and pregnant sentences, to the growing feeling of conservatism in the matter of operating in suppuration of the nasal sinuses, and especially of the frontal sinns. Finally, the President drew attention to various problems connected with the work in which further research was necessary, such as the place of vaccine therapy in nasal suppuration, and the factors which influenced the transformation of latent bacterial infections into active virulent disease.

DISCUSSION ON THE TECHNIQUE OF THE DIRECT EXAMINATION OF THE ŒSOPHAGUS AND LOWER AIR-PASSAGES.

Introduced by PROF. DR. VON EICKEN (Freiburg), and
DR. D. R. PATERSON (Cardiff).

Dr. von EICKEN dealt with the direct examination of the air-passages. With reference to the method of illumination, the speaker thought that most people preferred an outer light, because an inner light encroached upon the lumen of the tube, and was liable to be dulled by blood and other secretions or discharges. The fixed lamp was the most convenient for many reasons, and it was especially suitable for beginners, but there were many cases in which the Kirstein light was to be preferred, and among these children were to be included.

The passing of the tube was sometimes a matter of some difficulty, especially in children. It was important to press down the tongue in order to isolate the epiglottis before attempting to pass the beak of the tube over the epiglottis. In passing through the glottis the end of the tube should be carried into the posterior commissure. Another plan, which was especially serviceable in the case of children, was to bring the tube at right angles to the glottic opening. Once the tube had reached the trachea care should be taken to keep the lumen of the trachea always in view. When the bronchus was reached the tube should be carried along its lateral wall, and scraping the end of the tube against the median wall of the bronchus should be avoided. At the bifurcation the right bronchus seemed like a continuation of the trachea.

The most difficult cases to examine were cases of bronchiectasis, for in that disease the tube was liable to be flooded with the copious fætid secretions. This could be minimised by adopting the following procedure: For one hour before the examination the patient is made to assume the lateral horizontal position with the healthy lung down, in order that the bronchiectatic cavities may

be emptied of their contents; then the patient is examined in the sitting position.

Difficulties and Dangers.—In children the passage of the tube through the narrow glottis was apt to be followed by acute laryngeal stenosis for which tracheotomy might be required. For that reason, therefore, the smallest possible tubes should be employed.

In adults with prominent incisor teeth and a short muscular neck the difficulty of inserting the endoscope might be overcome by carrying the tube into the angle of the mouth. Brüning's counter-pressure antroscope was especially useful for these cases, as by pushing back the larynx it brought the anterior commissure into view. For the same purpose Killian's angle speculum was of great service.

In order to reach the right bronchus the tube should be carried into the left angle of the mouth, and *vice versa*. It was at times impossible to change the tube from one angle of the mouth to the other without withdrawing it.

The co-operation of the patient should be enlisted in order to restrain coughing, etc., and it was advisable to instruct him to make a pre-arranged signal if he felt pain or serious discomfort.

With regard to general anaesthesia chloroform was preferable to ether, because it did not irritate the mucous membrane and stimulate secretion. Even when a general anaesthetic was used cocaine and adrenalin should be applied, especially in cases where a foreign body was lodged in the air-passages, because in these cases there was swelling and engorgement of the area surrounding the foreign body. In young children cocaine and other sedative drugs were very dangerous, much more dangerous than chloroform.

Examination of the air-passages was contra-indicated in arteriosclerosis and heart disease, and in aneurysm it was improper to use this method for the sole purpose of determining the exact site of the disease.

For these reasons a general clinical examination of the patient should precede the examination, and in cases of suspected tumour or abscess an X-ray examination should also be made. In children death has occurred as a result of merely extending the head in cases of abscess of the lower cervical vertebrae compressing the trachea against the manubrium sterni. This could be avoided by performing the extension cautiously, noting meantime whether any already existing dyspnoea was exaggerated during the movement.

Tracheotomy was called for before attempting to pass the tube when there was severe dyspnoea. If tracheotomy relieved the

dyspnoea an indication was thereby afforded that the obstruction was situated in the larynx. This operation was also called for in many cases of foreign body in the air-passages. When, for example, the foreign body was large no attempt should be made to withdraw it through the larynx, because it was liable to lodge below the glottis. Such foreign bodies as beans also necessitated tracheotomy because they rapidly swelled and became soft, so that when they were seized they crumbled into pieces, any one of which might remain behind or be aspirated into the bronchi.

The difficulties attendant upon the removal of foreign bodies such as bones which were frequently found buried in granulations had been overcome since Brünings had invented his toothed forceps. In like manner the same surgeon had supplied forceps for removing collar-studs and an expanding instrument which ensured the removal of hollow foreign bodies. As a result most of these could be removed by upper bronchoscopy, but there were still a certain number of cases in which it was impossible to remove the body save through a tracheotomy opening. For the ease of foreign body lodged behind a bronchial stricture Brünings had invented a dilating bougie by which the stricture could be dilated and the foreign body removed.

The speaker related a case recently under the care of Prof. Killian in which a tack had been removed by an instrument which was made so as to enclose the head. In this case there was a stricture which was subsequently dilated with perfect success.

Dr. von Eicken concluded by giving a demonstration of the various instruments employed in the direct examination of the air-passages.

Dr. D. R. PATERSON, who confined his remarks to the subject of the direct examination of the œsophagus, said that œsophagoscopy differed from tracheoscopy in several ways. The trachea was an open tube with rigid walls, while the œsophagus was a collapsible tube with soft walls. At its upper end the œsophagus was closed by a sphincter which opposed the easy passing of the endoscope, and once the instrument had reached the œsophagus there was more tendency for its point to wander. This contrast between the two passages necessitated a corresponding difference in manipulation. As in tracheoscopy so in œsophagoscopy, all cases should be examined by the X-rays as well as by the ordinary clinical methods before direct examination was attempted.

With reference to illumination the speaker had found that in an emergency sufficient light could be obtained from an ordinary good

incandescent lamp if a large tube was used. He was in the habit of using an internal lamp, a forehead light, or a fixed light according to circumstances. Each had its uses. The drawback to the fixed light, a drawback which even the newest inventions had failed to remove, was that the light was in the way when instruments had to be introduced. He himself used the Kirstein lamp most frequently because it permitted more freedom in operating.

The œsophagus should never be examined blindly and the mandrin pilot had only a very restricted use. In this matter he entirely differed from Guisez, who had recently stated that the passage of a flexible bougie should always precede direct inspection. This procedure exposed the patient to a double passage of instruments and increased his discomfort very considerably.

Save in children and nervous adults local anæsthesia was sufficient. For a general anæsthetic chloroform was commonly employed. He had also found that ether by the open method was free from disadvantages.

The sitting position was only possible for five or ten minutes. After that time the mucus secreted by the œsophagus found its way into the larynx and set up coughing. This did not occur when the patient was lying down on his side or back.

In introducing the tube the point should be kept strictly in the middle line and passed over the interarytenoid region in this position. When the lip of the introitus projected the patient's head should be moved, he should be asked to swallow, or the tube should be rotated. It was at this point that the pilot sometimes proved useful. Once in the œsophagus, the deviation of the organ to the left should be remembered and the tube carried to the right angle of the mouth. "Sticking" was usually due to faulty direction.

In cases with ulceration, the most scrupulous care and delicacy were called for, because even with the ocular method perforation of the wall of the gullet had occurred.

Beaked tubes were less useful for the gullet than for the larynx. He preferred the old rounded tube, although it was more difficult to introduce. For the œsophagus, also, telescopic tubes were less adapted than for the air-passages, where the dimensions became reduced as we passed downwards.

Œsophageal forceps should be larger and stronger than bronchial forceps.

Dr. WM. HILL said that elongated tubes or cylinders of the same calibre throughout their entire length were almost universally employed

for endoscopy of the œsophagus, trachea, and bronchi; and extension tubes also were constructed on the cylindrical principle. He had found, however, that for the larynx and gullet elongated funnels possessed marked advantages over tubes of uniform calibre. Owing to the fact that the hand-lamp was attached centrally to the shaft of the endoscope there was no room for the passage of swabs and instruments by the side of the lamp down the endoscopic tube without displacing the hood and thus shutting off the light; moreover, the proximal end of the tubular endoscope being of the same narrow calibre as the distal end, the handle of the forceps or other instrument lay in the line of vision and obstructed the view in the narrow tube. In his own funnel-like endoscope the lumen of the proximal end of the instrument had a cross sectional area more than double that of the distal end, and by an eccentric attachment of the hand-lamp there was ample space for the passage of the instruments, sponge-holders, etc., by the side of the hood of the hand-lamp without cutting off the light. Forceps, etc., could be passed down close to one side of the funnel, and the inserted instruments, except at their distal ends, were not in the centre of vision. The immense gain in simplifying technique could only be fully appreciated after actually employing a funnel-like endoscope. He had shown before this Section at the Belfast Meeting last year a new pattern operating laryngoscope. That instrument was not a complete funnel, but had a lateral slit to give facility in the manipulation of large forceps, etc. Following on this he had designed elongated funnels on the same principle for employment in the gullet. These were at first complete funnels, but in order to facilitate the removal of the œsophagoscope after placing a radium apparatus in malignant strictures, he resorted to the principle of the slit-funnel, as in the laryngoscope. This pattern of endoscope also facilitated many other endo-œsophageal procedures, such as the dilating of strictures, the removal of portions of new growths, and especially the extraction of foreign bodies. For example, instead of using a special apparatus for the closing of an open safety-pin in the gullet before attempting extraction, with his slit œsophagoscope one could draw the pin-point of the safety-pin within the lumen of the endoscope with forceps, where it could not catch the mucosa; the jaws of the forceps were then transferred to the other limb of the safety-pin, traction on which partially shut it, and it could be drawn up through the endoscope with safety. The distal end of his endoscopes was bevelled, so that it was possible to pass the instrument throughout its whole course under vision, as in Brüning's tube-spatula. This was especially necessary in traversing the deep pharynx and cervical œsophagus, which was the dangerous area where perforations were occasionally made. With a bevelled-ended instrument passed under vision this calamity should not happen, more especially if the patient was directed to swallow when the post-cricoid narrowing was passed, and to cough so as to open the lumen when the mouth of the œsophagus was reached, and whilst traversing its collapsed cervical portion. If difficulty was experienced in passing the instrument on account of stricture in the post-cricoidal pharynx and upper œsophagus, the instrument should not be passed onward until the lumen has been dilated up by graduated bougies. The passage of the œsophagoscope had been described as an easy procedure, but it was also easy to perforate the gullet, and in some instances it was probable that neglect of caution in the region of the mouth of the œsophagus had led to these regrettable incidents. He had heard of six cases of œsophagoscopic perforation of the gullet in this country alone with three deaths, so that a word of caution was not out of

place. The cross-section of his œsophagoscope was distinctly elliptical at the proximal end and nearly circular at the distal end, and the reason for this and for the long diameter being transverse was obvious. Extension tubes he considered to be a needless complication in œsophagoscopy technique; moreover, they are liable to break at the spring and to clog in the groove after frequent hospital use and sterilisation. Brüning's two smallest bronchial spatulæ with extension apparatus were certainly useful in dealing with the lower air-passages of infants and small children; but for older patients he preferred the slit funnels. His endoscopes were made of steel. These new pattern œsophagoscopes had been in daily use at St. Mary's Hospital for nearly a year, and those of his colleagues who had employed them found that they greatly simplified endoscopic surgical technique in the gullet. Dr. Hill concluded by detailing the dimensions of the instruments he had devised.

Dr. STCLAIR THOMSON said that when the indirect method could be used it should be resorted to in preference to the direct method for the removal of laryngeal neoplasms, the application of the galvanocautery, etc. He had found the direct method disappointing in trying to remove minute growths from the anterior commissure. With regard to instruments he preferred the old fish-tail end to the beaked end.

Mr. E. WAGGETT remarked that the results when using the endoscope were better under cocaine than under a general anæsthetic. He advised that the patient should be instructed to make a signal when the examination became unbearable, and in order to enlist the patient's confidence the surgeon should promise to respect his wishes.

Mr. STUART-LOW had found that warming the cocaine improved its efficacy.

Mr. SCANES SPICER thought there was a tendency to use cocaine carelessly, and recommended that excess of cocaine solution should always be mopped up.

Mr. PERMEWAN agreed with Dr. StClair Thomson that it would be a misfortune if, as a result of the new method, the skill of laryngologists in the old method were to decline.

Dr. N. C. HARING had found the hypodermic administration of $\frac{1}{150}$ gr. atropin before chloroform was given useful in preventing an excessive secretion of mucus. He used a solution of 20 per cent. cocaine in alcohol.

Dr. IRWIN MOORE complimented Mr. William Hill upon his instruments.

Dr. BROWN KELLY had found that in children the larynx was most easily reached by the tube when the patient was lying on the side with the chin flexed. Referring to cardio-spasm, he said that the condition was generally diagnosed as malignant stricture during life. He had recently seen a case in which all attempt to pass the tube into the stomach had failed. After death it was found that the patient had been suffering from malignant disease of the lesser curvature of the stomach, and that the growth had pushed the mucous membrane of the viscus into the lower end of the œsophagus in such a way as to block it.

Dr. ANDREW WYLIE had been able to get rid of the trouble of excessive laryngeal secretion by small doses of potass. and sod. broumid, for a few days preceding examination.

Dr. BRYAN (New York) related a case of a child into whose trachea a grain of corn had slipped. Owing to swelling about the subglottis the tracheoscope could not be inserted, and tracheotomy had to be performed. Further interference was, however, rendered unnecessary by the spontaneous expulsion of the foreign body through the tracheotomy wound.

Dr. KIRKLAND had seen at Vienna, in a case of asthma, the contraction of the bronchi.

Dr. WALKER DOWNIE, regarding anæsthetics, had got the best results from cocaine preceded by bromides.

Mr. T. GUTHRIE had found the Kirstein lamp more serviceable than the Brüning light in cases of papillomata in childhood.

Dr. DONELAN agreed with the recommendation to give bromides. He also advised the retention of the old method in the removing of laryngeal growths.

Dr. PEGLER referred to the old-fashioned plan of spraying the larynx with bromide.

The PRESIDENT had had a large experience of foreign bodies removed by tracheo-bronchoscopy, many of which were on exhibition in the museum. He related the case of a child with papilloma of the larynx in which, on admission to hospital, a diagnosis of diphtheria had been made and antitoxin administered before he was asked to see it. In one of his cases, a baby, aged four days, a teat used as a "comforter" had stuck in the œsophagus. In children as young as this the larynx and trachea are so small that the presence of the tube in the gullet with the head extended is sufficient to obstruct the air-way completely. In examining the larynx of young children the patient should be turned on one side, the head flexed, while an assistant pushes up the larynx. He preferred a Kirstein lamp for many purposes. In an emergency half a dozen wax candles or a bicycle lamp proved to be a sufficient source of illumination. In addition to bromides he recommended the sucking of ice for a few minutes before the tube was passed.

Dr. von ECKEN agreed with Dr. StClair Thomson that for laryngeal manipulations the indirect method should be tried first. He had often been able to see a foreign body in the bronchus by means of the ordinary laryngeal mirror. As to anæsthetics, he preferred chloroform to ether because it was less irritating to the mucous membrane. Bromides were useful if there was time to give them, but in the case of foreign bodies, when promptitude was an important factor, it was, of course, impossible to delay until the bromide took effect. He repeated his warning of the danger of cocaine in childhood. The head should not be pushed too far back in the case of children. The diagnosis between cardio-spasm and cancer of the lesser curvature of the stomach was difficult, but in such cases he employed a special instrument in order to remove a portion of the diseased tissue for pathological examination. An important point in the diagnosis, however, lay in the fact that in cardio-spasm there was a history of dysphagia of some years' duration. With reference to Dr. Hill's split tubes he thought he would prefer a tube spatula with a Kirstein light. Acute cases of asthma could be treated with bronchoscopy and the injection of adrenalin.

Dr. D. R. PATERSON, in reply, drew attention to the importance of rapidity in examining and operating on the bronchial passages.

Dr. WM. HILL, in reply, said he was sceptical of what was called cardio-spasm. In any case, if the obstruction was due to spasm it would disappear under an anæsthetic. He thought that what was taken for spasm was tumefaction. He had seen thirty-seven cases of malignant stricture but had never yet come across a case of spasm.

CONGENITAL STENOSIS OF THE CHOANÆ.

BY MR. J. SMITH FRASER (Edinburgh).

Of 75 reported cases of congenital atresia of the choanæ 31 were males and 44 females. In 40 the atresia was bilateral.

Post-mortem specimens of the condition were rare, but he had succeeded in getting one.

The case was that of a female with suppuration in the left ear. The right choana was closed by a septum. The patient was not a mouth-breather and yet the palate was higher on the side of the atresia. Thus choanal atresia could not be cited in support of the usual theory as to the production of Gothic palate. The girl had died of otitic meningitis consequent upon syringing the attic.

The PRESIDENT remarked that several of these cases which had been successfully operated upon had been shown at the Laryngological Section of the Royal Society of Medicine.

Dr. DAN McKENZIE said that one of the cases had been shown by him. He agreed with Mr. Fraser that no argument could be based upon the condition of the palate found in atresia of the choana in support of the open-mouth theory of deformed palate.

Dr. BROWN-KELLY had also had a similar case under his care.

Mr. W. STUART-LOW remarked that in these cases it was important to straighten the septum before operating on the atresia.

The PRESIDENT said that the rule was to remove not only the web, but also the posterior end of the vomer.

(To be continued.)

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Meeting, 1910.

CONSIDERATION OF THE END-RESULTS OF THE OPERATION FOR SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

BY DR. FREDERICK C. COBB (of Boston).

The paper showed the results of the submucous operation after the lapse of several years. The cases were operated by men sometimes experienced in the procedure, sometimes almost new to it; as a result the number of faults in technique were at first large, and perforation quite common. Fifty cases were

selected on which the operation had been done for the longest time possible. Most of them had been operated on four to six years ago. The information desired was:

(1) As to whether the operation had relieved the obstruction for which it was done.

(2) Whether naso-pharyngeal catarrh, deafness, or other symptoms had been relieved.

(3) As to the bad effects of the operation; whether perforation caused annoyance, and in what way; whether dryness or scabbing occurred in mucous membranes deprived of their cartilaginous framework; whether cartilage renewed itself; what faults were most common in the technique as shown by after-results.

(4) In children under fifteen years of age, did the removal of a large piece of cartilage interfere with the normal growth of the nose in such a way as to cause dropping of the tip or other deformity?

On the fifty cases examined obstruction was subjectively relieved in all but five or six, in which the improvement was slight or absent; in two or three turbinectomy was resorted to.

Naso-pharyngeal catarrh was seldom entered on the histories as a result of the nasal obstruction, and, if present, was relieved in about half of the cases. Perforations, which resulted frequently in the earlier operations and diminished as the technique improved, seemed to cause but little trouble unless the patient became aware of their existence, and then the complaints seemed more nervous than real. Scabbing and crusting were seldom troublesome even when evident objectively.

The records were not complete enough to enable the author to be sure that scabbing or crusting was or was not due to destruction of part of the mucous membrane of one side. In a few of the cases antra were subsequently opened and found to contain pus, and a mild ethmoiditis might have given the same result.

In no case examined was there any reproduction of the cartilage.

The fault most commonly met with was insufficient removal of the base, and next in frequency the leaving of cartilaginous projections above.

Of great interest to the writer was the effect of the operation in young children. It has always seemed possible that the removal of cartilage, containing, perhaps, centres of growth, might affect the development of the nose so as to cause some difference in its shape. Sixteen children under fifteen and over six were examined.

Of these, four showed some alteration in the shape of the nose from the normal standard. Two of these the parents report to have always been broad and drooping slightly at the tip. One, a depression at the end of the nasal bones, was there before operation, perhaps on account of an old abscess of the septum; and the fourth, a very marked case, was the result of a fall, which had probably caused the deviation. Further investigation showed that but little of the cartilage had been removed, but that a Gleason operation had been done subsequently.

Although in this series no bad results are observed, yet the writer feels until more cases in young children have been examined no absolute scientific conclusions can be drawn.

Dr. GEORGE L. RICHARDS has looked up the records of 150 cases of submucous operation on the septum done either for deviation, or for spurs, or for both. In the series of 150 cases 6 had perforations. In 2 syphilis was a factor, but unknown at the time the operation was done. These should, therefore, in fairness to the operation, be deducted from the number of perforations, leaving four, or one in 37.5 cases. It would seem that whereas a perforation can usually be avoided, there is an occasional case where instead of a true bend there is a sharp knuckle on one side and a corresponding sharp depression on the other. The mucous membrane covering the sharp bend of the knuckle is very thin; it is also very thin on the concave side. To lift up the mucous membrane on the concave side and to remove the cartilage without nicking or breaking through on the convex side is in the occasional case well-nigh impossible, no matter how experienced the operator may be. He had not found the perforations to be of any particular moment; they have not been very large nor have any whistles been produced. They are fewer in number in the earlier operations when the nasal saw, Asch operation, or the Watson-Gleason operation were employed. In all of these there were rather frequent perforations. Formerly he had hesitated about doing a submucous operation on the stubby nose of a small child, the one occasionally seen where the bend blocks one nostril and the projection of the tip of the cartilage blocks the other. After one or two submucous operations on these, in which some months afterwards there appeared to be a slight depression, he had changed entirely his plan of operation on the young child, and now operates under ether on any child with an anterior deviation. The method is as follows: An incision is made on the convex side a little behind the tip, preferably in the left nostril, whichever way the deviation may be. The muco-periosteum is then dissected back as far back as the deviation extends, which in these children is not likely to be for a very great distance. An incision is then made through the cartilage, a little behind the tip, and the muco-periosteum dissected up on this side as far as may be necessary. With a nasal chisel the attachment of the septum to the floor of the nose is severed, leaving the cartilage for the moment attached above and posteriorly but not inferiorly. The septal cartilage is now entirely movable, but freed from its inferior attachment, which if left, tends during the healing process to reform the deformity. The cartilage is now straightened with the finger, brought into the vertical position, and

held there with cotton splints for two or three days. There is no sinking in, as no cartilage has been removed; it has only been re-shaped. The muco-periosteum re-attaches itself. The results so far in the few cases in which he had used this operation have been entirely satisfactory. It certainly has the advantage that no tissue is removed, and this in the growing child is a decided advantage. Later on, if for any reason the deformity should re-form when the individual is at a suitable age another operation can be done. In the cases operated on in this way there has been a sufficient amount of air-space left. It is essential that the nasal process of the superior maxilla be fractured especially if it project to one or other side of the middle line. It may even be necessary to remove a small portion of this spine if it should be redundant. In removing this there is no danger of sinking in of the septal cartilage. It is necessary to dissect up the muco-periosteum, so that when the septal cartilage is put into proper position it will attach itself properly to the muco-periosteum in its new location. So far as the general results of the submucous operations are concerned, they have been satisfactory, although it cannot be said that in all instances the operation has accomplished everything that the patient desires. Patients will still complain of catarrh, but they can breathe, and for the purpose of proper breathing alone the operation is worth doing. Improvement continues for some months before the full result is attained. Where the inferior turbinate is also hypertrophied, it seems unwise to operate on it at the same time as the septum, as there is a possible danger of an adhesion, and the patient suffers more when both are done at once. He now operates on the turbinate some time after the septum wound has completely healed.

Dr. HARRIS P. MOSHER said that the difficulties which he encountered were in children. He had operated upon a number under eight years of age. It had been stated that there was a drop to the tip of the nose, whereas Dr. Cobb found very little, if any, drop in this series of cases. In one case there was a drop, but the patient was operated upon by the old Gleason method. Perforations occurred either very early during the first three weeks or after two years, and in considering the end-results of submucous resection this fact must be taken into consideration. He had had a number of private patients who had complained of scabbing as late as a year or two after the operation. Most of his submucous resections are done under ether anaesthesia, and in many cases he trimmed the inferior turbinate, particularly where the nose was narrow.

Dr. THOMAS J. HARRIS agreed with Dr. Cobb that the end-results are subjectively as satisfactory in the main, but objectively not entirely so. He wished to add to the end-results an interesting case which had come under his observation in the Manhattan Eye, Ear, and Throat Hospital. The patient, one of the assistants at the hospital, had a point of contact between the nasal septum and the nasal wall on the side of the convexity. A submucous resection was performed by one of the distinguished Vienna surgeons. The result was a complete cicatricial stenosis on the side of the septum. Packing with long strips of gauze were used, which were left in for some time, then withdrawn, causing considerable traumatism.

Dr. ROBERT LEVY called attention to the carelessness which often pertains in the taking of histories before operation, especially with regard to syphilis. This had been impressed upon him by the experience of Jansen, who was at one time threatened with a mal-practice suit because he had operated upon a patient who had syphilis and in whom a nasal

deformity resulted. One should always make a thorough investigation as to syphilitic infection. The same need not be said with reference to tuberculosis. He had operated for deflected septum upon many tuberculous patients without fear of necrosis and with much general benefit. The dropping of the tip is the result of the development of contracting cicatrices. Even when the cartilage is not removed, but merely replaced, there is danger of cicatricial contraction and deformity. In view of the unsettled opinion as to the deformity, he advocated operating upon adults only to the extent of relieving the obstruction. Children under twelve years should not be operated upon for the correction of slight or moderate deflection. The object in all cases should be to relieve the deformity and not to see how much of the septum can be removed merely because it is a part of the operation.

Dr. STEPHEN H. LUTZ called attention to the wisdom of removing as little cartilage as possible in adults, for the reason that very little new cartilage is formed as one advances in years. Perforations which occur two and three years after the operation, as cited by Dr. Mosher, are probably due to the habit of picking the nose. He mentioned two cases in which this was established positively. One patient, four days after operation, had a good septum; on the fifth day there was a large perforation. The patient confessed that she had scratched the nose with the finger, which went through.

Dr. EDGAR M. HOLMES asked Dr. Cobb why he pared the turbinates, whether he did so in cases of hyperplasia or general bony hypertrophy, whether he pared both sides, and how much of the turbinate tissue he removed.

Dr. SIDNEY YANKAUER was convinced that the scabbing after the submucous operation depends entirely upon the amount of scar-tissue that is left in the septum, in other words, upon the area of the septum which is denuded of its ciliated epithelium. In cases in which a horizontal scar is left, particularly in flap operations where there is considerable retraction of the flap, so that there is left a broad band of squamous epithelium running horizontally over the septum, there is the greatest scabbing. The reason for this is that drainage of the nose and accessory sinuses takes place over the septum, the flow depending considerably upon the presence of ciliated epithelium. The broad band of squamous epithelium interferes with the flow, and the scabbing results. A vertical incision is, therefore, preferable to the horizontal. He always avoided, if possible, operating upon young children. In over three hundred submucous operations he has not operated upon more than half a dozen children. In the first place, he objects to doing a submucous resection under a general anæsthetic, or in the horizontal position, as it is almost impossible to obtain a bloodless field of operation, and so to do an exact operation under these circumstances, particularly in an extreme deviation. In the second place, the majority of the children who have deviations do not suffer from this alone. They have or have had adenoids, removal of which will cause a decided alteration in the face as the years pass. Many of these children have high arches and projecting teeth. If a child has a small face, when there are adenoids the nasal chambers are small and undeveloped. When the adenoids are removed and the face develops there is considerable chance for the deviation to become obliterated of itself. For these reasons he has operated upon children only when there was extreme deviation, and only when the child was sufficiently tractable for the operation to be done under local anæsthesia. In such cases he removes only enough tissue to insure breathing.

Dr. ROBERT H. CRAIG (Montreal) performs the submucous resection in two stages when a general anæsthetic is indicated. He makes the original incision and liberates the muco-perichondrium and periosteum under cocaine (adrenalin) anæsthesia. The patient is then placed in a recumbent posture, ether is administered, and a post-nasal tampon is inserted. A mouth gag is applied and a suture put in the tongue for traction purposes. The nasal packing, which has been saturated with 1:4000 adrenalin solution, is removed from both nostrils. The deflected cartilage and bone can be removed carefully and deliberately. Since adopting this method of operating in two stages (when it is desirable to administer a general anæsthetic) Craig has had no difficulty in controlling hæmorrhage, which caused considerable trouble and loss of time in many of these cases.

Dr. WENDELL C. PHILLIPS thought the end-results depended in large measure upon the technique and the skill of the operator. His best results had been obtained with the patient in the recumbent position on the operating table, with the head-rest high. The discomfort to the patient is thus obviated, the liability to fainting is lessened, and the manipulation on the part of the operator is much more easily accomplished. He had never had reason to do the operation under a general anæsthetic. In atrophic rhinitis, according to Wright, the operation should never be performed.

Dr. COBB, in reply, said that he had never seen perforation occur subsequent to the operation. He believed that a small perforation may have occurred in the mucous membrane with laceration of the periosteum, and that the later increased size was due to the shrinking of the mucous membrane edges until they reached the firm support of the periosteum below.

(To be continued.)

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V. HAMMERSCHLAG *in the Chair.*

Abstract of the Proceedings.

THE ARTIFICIAL TYMPANIC MEMBRANE AND ITS MODE OF ACTION.

By R. BÁRÁNY.

Bárány commenced by stating that his remarks must only be taken as a preliminary communication on investigations in respect of which he had as yet been unable to formulate definite conclusions, but the notice of Beyer's paper on "The Significance of the Membrane of the Round Window" in the programme of the German Otological meeting had made him feel that he should publish his

present views on a subject which for a long while had been engaging his attention.

The unreliability and inaccuracy of patients' reports render research in this direction so unsatisfactory that he had found it necessary to elaborate a more exact method, which however was only applicable to cases in which the tympanum was completely covered with epithelium and the tube closed.

It is carried out by running a drop of mercury into the ear, when it is found that the hearing is improved if it occludes the niche of the round window. One must not regard the membrane itself as being covered with mercury, for the air in the niche is intercepted between the two. The amount of mercury is of no importance so long as the niche is completely occluded and the oval window left free, but if both windows be simultaneously covered the hearing then becomes worse. Bárány had not been able to carry out an analogous experiment on the oval window, as this entailed laying the patient down and then bending the head downwards, thus introducing so many difficulties as to make the test uncertain and valueless.

By moving the head so that the mercury also is moved from the round niche and comparing the perception for the notes of various tuning-forks in the two positions the improvement in the hearing can be noted. This apparently varies with different tones, but in one case all the forks used were heard better. Accurate data on these points he was, however, as yet unable to furnish. He had also tested the bone-conduction, but would at present confine himself to stating that air- and bone-conduction are in no way opposed to each other, and that an improvement in air-conduction must not be thought to necessarily mean a shortening of bone-conduction or *vice versa*; this latter point he had been able to determine by means of tests which he had adopted with mercury and liquid vaseline in cases where the tympanic membrane was normal. These tests showed that at the moment when this application reached and covered the membrane a maximal lengthening of the bone-conduction took place for the tuning-fork "c," maximal because the note was really heard until the perception by air was lost. And at this moment the air-conduction is either normal or only very slightly reduced.

By means of the same tests with liquid vaseline and mercury he had acquired further important data towards the solution of the problem of the manner in which the artificial tympanic membrane acts. Thus, when the tympanic membrane is covered with oil the

first thing noticed will be that the perception for the higher notes is depreciated and the range for whispers rapidly decreased. The same agency enabled him also to assert that the action of the mercury membrane depended on the obstruction of the path of the sound waves *via* the air to the round window. But why should this obstruction bring about an improvement in the hearing? Over this he had puzzled a long while until he had happened on the work of Mach and Kessel in 1874, where it was stated that by means of the stroboscope they had inspected the stapes and round window under the influence of sound and noted that when the stapes moved inwards the round window was pushed outwards and *vice versa*.

Now in cases where the membranes of both the oval and round windows are unobstructed sound-waves will affect each equally and cause each to move inwards. It is obvious that here a derangement will arise, and that some power of the perception will be lost. If, however, the membrane of the round window be protected from the direct influence of the sound-waves without its power of mobility being impaired, then it will be readily able to move outwards when the inward movement of the membrane of the oval window takes place. This protection of the round window can, of course, be produced by other means than mercury alone, by pledget of wool or by oil for instance, but not with so much accuracy. When one has convinced oneself of the validity of this experiment one may then apply it for diagnostic purposes in order to determine if an artificial tympanic membrane would be efficacious, always remembering that great care must be taken not to do more than occlude the round window, as if the oval window is also occluded a depreciation of the hearing will be produced. Experiments with wool show that most probably occlusion of the oval window alone reacts in the same way in most cases; sometimes, however, considerable differences obtain, but an attempt to enter into an explanation of these phenomena would lead one too far into the domain of hypothesis.

H. FREY remarked that Bárány's communication agreed with the results of experiments which he himself had undertaken, prompted by an article of Fruitiger's on a test which comprised occluding the round window or its niche with a small pledget of wool, and by which an improvement in hearing was found to occur. He had also found that it was the deeper tones which were affected the most. He had been in the habit of stating in his courses that any improvement in hearing which followed the use of an artificial tympanic membrane depended on the fact that the round window was free. He had not yet published the results of his observations.

Prof. GOMPERZ said that he had communicated the results of some research on the round and oval windows in 1899, but that contrary to Bárány he had obtained more improvement in the hearing by treating the oval window. His best results followed the insertion of a plug between the remains of the incus, malleus or tympanic membrane, and the foot-plate of the stapes, which thus enabled sound-waves to be conducted to the labyrinth, as in the normal ear obtained *via* the chain of ossicles. If the round window were occluded at the same time his results were not affected thereby in any way worth mentioning. These observations, combined with the fact that he had been able to detect only an advantageous influence on the hearing from the simultaneous occlusion of both windows, compelled him to regard the ingenious theories which Bárány had advanced as not applicable. In 1902 he had also published articles on his investigations into the subject of artificial membranes.

G. ALEXANDER remarked that of course one must pre-suppose an intact cochlea in the consideration of this question, otherwise no artificial aid could improve a power of hearing which did not exist, whilst if this faculty were present it was difficult to say why the hearing could not be improved. As regards the artificial membrane, he did not think it was certain that by the application of a pledget to the promontory the vaseline oil would necessarily run into the round niche, he thought it would have run into the meatus. He had seen cases where scar-tissue had formed over the round niche, in which, after the cicatrix had been cut through, the hearing had improved. It seemed to him that vascular influences were also brought into play in this connection. It was easy to understand why the artificial membrane reacted best when applied to the round niche, as in that position it served to enlarge the promontory under which directly lay the organ of Corti, and thus the ligamentum spirale might be affected and the hearing improved. He did not believe that even the smallest particle of mercury finds its way into the niche of the round window. If one lays a whole temporal bone in some fluid the greatest care must be taken in order to bring the fluid in relation with this part, as a kind of meniscus is formed there. The action of the mercury is due to its relation with, and enlargement of, the promontory at its thinnest portion, viz. between the stapes and the window round.

E. RUTIN recalled a case which supported Bárány's view, in which scar-tissue involved both the round and oval windows. After a partial division of the scar over the oval window the hearing was only very slightly improved, but when the round window had been laid free a very marked improvement occurred.

V. HAMMERSCHLAG had been in the habit for several years of adopting a method to aid the hearing in cases where an artificial membrane was inapplicable because the medium-sized or large defect was not situated at the periphery. This consisted in placing the head on one side, instilling a couple of drops of liquid vaseline, and then blowing them into the ear. By this means the fluid was driven into the tympanic cavity and there acted as an artificial drumhead. Its action was usually maintained for some while, probably because the fluid was retained in this position for some considerable time by capillary action.

BÁRÁNY, in reply to Frey, stated that he had, of course, tested the bone-conduction, but had not yet been able to formulate any definite conclusions thereon. In answer to Alexander, he said it was quite easy to assert that by applying liquid vaseline to the promontory the round window was also occluded. Of course no fluid would actually reach the membrane itself, and it was on this very point that the solution of his

theory rested. With Alexander's suggestion that the enlargement of the surface of the promontory by mercury was accountable for the improved hearing he was in complete discord. He had experimented as to the conductivity of mercury for high tones, and had found that 1 mm. of mercury sufficed to completely arrest the passage of high tones through a glass tube. Prof. Gomperz's method of applying a swab soaked in liquid vaseline to the niche did not ever afford a certain closure of the niche, and it was for this reason that he (Bárány) had employed mercury, by which means one was able repeatedly to demonstrate the action of an artificial membrane. He would prefer not to make any definite statement as to the lowering of the lower tone limit as the number of the cases he had tested had been too small. With the blowing in of liquid vaseline, as described by Hammerschlag, a drop had evidently covered the round niche and thus formed an artificial membrane. In conclusion, he would like to allude to a case, the explanation of which had only just occurred to him. It related to a patient on whom the radical operation had been performed, and in whom there was yet a small granulating focus over the promontory. If boric powder were blown in an improvement in the hearing took place, not, however, at once, but after some five minutes. This application must have produced sufficient reaction to promote a secretion, which then occluded the round niche, and it was at this moment when the hearing was affected. He could accomplish the same result in this patient with liquid vaseline.

ALEX. R. TWEEDIE (*trans.*).

INTERNATIONAL CONGRESS OF MEDICINE AT BUDAPEST.

September, 1909.

SECTION OF OTOTOLOGY (AND INTERNATIONAL CONGRESS OF OTOTOLOGY).

(*Continued from p. 417.*)

THE INDICATIONS FOR, AND THE OPERATIVE TREATMENT OF, SECONDARY SUPPURATIVE LABYRINTHITIS.

By Dr. SCHMIEGELOW (Copenhagen).

Forty-two cases were reported, ten of circumscribed labyrinthitis, partial or serous, all of which were cured by opening and evacuating the contents of the middle ear. The remaining thirty-two were cases of diffuse suppuration of the labyrinth. The indications for operation on the labyrinth do not solely depend upon the functional examination, but also upon the progress of the malady and upon the direct examination of the outer wall of the labyrinth after the radical operation. The treatment of secondary labyrinthitis consists partly in effective prophylaxis and partly in the surgical

opening of the cavities of the labyrinth. The method of opening recommended by Jansen and by Neumann should not be considered the chief method. This operation is difficult and deep, and should not be practised unless there was some reason for suspecting suppuration within the posterior cranial fossa. Uffenorde's method protects us against injuring the facial nerve; the aqueduct of Fallopius is opened so as to expose the nerve, then the semi-circular canals, the vestibule, and the cochlea are opened. In 22 of the speaker's 32 cases of diffuse labyrinthitis the only treatment adopted was the radical operation on the middle ear. Of these 22 cases 2 died of complications anterior to the operation, and of the remainder 2 died while 13 recovered. In 10 patients the labyrinth was opened; 7 recovered, 2 died of "ante-meningitis" appearing seventeen days after the operation.

TREATMENT, ETC., OF PURULENT LABYRINTHITIS.

BY DR. G. ALEXANDER.

See p. 451.

DEMONSTRATION ON THE PATHOLOGY OF LABYRINTH SUPPURATION.

BY DR. H. NEUMANN.

Referring to Dr. Schmiegelow's paper, the speaker expressed himself as opposed to the views therein presented. He did not agree that we should wait for signs of meningitis or brain abscess before operating on the labyrinth. Nor could he agree that the operation recommended by himself was as difficult as Prof. Schmiegelow had said. If sinking of the dura mater, for example, should occur, it could be kept out of the way by means of a spatula. He held that the exposure of the facial nerve, as in Uffenorde's method, rendered it liable to compression by cicatricial tissue after the healing of the wound. Besides, there was considerable danger of injuring the nerve while attempting to remove the bone of the Fallopian canal.

INDICATIONS FOR THE LABYRINTH OPERATION.

BY DR. BÁRÁNY (Vienna).

If there was manifest or latent diffuse labyrinth suppuration, the complete labyrinth operation recommended by Neumann

should be performed at the same time as the radical mastoid. The only exceptions were those cases in which it was seen, after completing the radical mastoid, that the labyrinth disease had already undergone cure. It was, in his opinion, not improper to defer operating in manifest labyrinth suppuration for a week, when, apart from the labyrinth symptoms, there were no other signs present—no headache, fever, tenderness of the mastoid process, or profuse discharge from the ear. But when the slightest sign of those phenomena was present, either at the onset or while the case was under observation, then operation must be immediately performed. In circumscribed labyrinthitis and when there was a fistula, the operation depended upon the condition of the hearing and the presence or absence of vertigo. If there was deafness the complete labyrinth operation of Neumann was indicated. If the hearing was but slight in the diseased ear and good in the other ear, the minor labyrinth operation of Hinsberg might be performed, since by so doing the wound healed more rapidly than after the simple radical mastoid. Some people were very insensitive to vertigo. Others suffered so severely from it that they became neurotic and unfit for work. In these cases, even if the hearing was not yet particularly impaired, Hinsberg's operation was recommended.

FISTULA OF THE LABYRINTH CLOSED BY MEANS OF LEAD.

BY DR. BÁRÁNY (Vienna).

In a case with symptoms of fistula, and, as the tests showed, with an intact membranous labyrinth, Dr. Bárány closed the fistula with an obturator of lead amalgam laid upon the surrounding bone and gently pressed down so that no air was left between the metal and the membranous canal. The result was, so far, successful.

Dr. FREY (Vienna) held, in opposition to Prof. Schmiegelow, that the Uffenordt operation was both dangerous and superfluous.

Prof. JANSEN said that for many years he had been in the habit of opening the labyrinth as far as the internal meatus in cases in which the bone was diseased, but he could not approve of the teaching that this exposure of the internal meatus should be insisted upon in all cases. Further, he did not think that the whole labyrinth should always be opened. He limited himself to the opening of the diseased portion, especially to the vestibule. Experimental labyrinthotomy, he held, should not be permitted. He uttered a decided warning against the Uffenordt method of exposing the facial nerve. And in like manner he cautioned the Section against incisions into the dura. On the other hand, he agreed

that in the acute hamorrhagic infective labyrinthitis which followed luxation of the stapes opening of the vestibule within twenty-four hours was required, but without opening the cochlea.

Dr. WANNER (Munich) said that they had heard much of operations on the labyrinth, which at the present time were apparently very frequently performed: a large number of labyrinths were certainly operated upon without any exact indication or diagnosis. There could be no doubt that, as Alexander had already remarked, a great number of cases of labyrinth suppuration recovered without operation. Cases of deafness in chronic middle-ear suppuration were not infrequent which had appeared with little or no disturbance; such must, therefore, have been cases of uncomplicated labyrinth suppuration which had terminated in spontaneous recovery. The difference between chronic and acute suppuration of the middle ear was very considerable; chronic suppuration did not supply any direct indication to operation on the labyrinth unless there were signs of some grave complication present. The tuning-fork tests supplied an indication for operating; as long as tuning-fork *a* (435 V.D.) could be heard by the affected ear—the other ear being excluded—opening the labyrinth, in his opinion, was a mistake. Ruttin's tables supported the speaker's contentions, for of those cases in which the labyrinth was left untouched nearly 100 per cent. recovered, while those operated on showed a mortality of 40 per cent.

Dr. KÜMMEL (Heidelberg) uttered a warning against the acceptance of the elaborate methods of testing the labyrinth perfected by the Vienna school as the definite basis for therapeutic measures. The indications for interference should rather be sought in the general clinical survey of the case and not exclusively or preferably in the results of the function tests.

Dr. ZITOWITCH (St. Petersburg) related some cases from his clinic which had led him to the opinion that in suppuration of the labyrinth radical measures alone were of any service. Of all methods of operating he awarded the palm to Neumann's, since it provided the most perfect drainage and permitted the diagnosis between labyrinth and retro-labyrinth processes to be made. He did not consider this operation to be one of any great technical difficulty.

Dr. RUTIN (Vienna) thought that some of the speakers did not appear to understand the indications for operation which he and his colleagues followed. The labyrinth was not operated on unless the radical operation was also called for. It stood to reason that in many cases the operation could be postponed, but when there was diffuse disease of the labyrinth, that is to say, when there was total deafness and absence of the calorific reaction, then the labyrinth operation should be performed at the same time as the radical mastoid. The operation in two stages was only undertaken when there appeared diffuse labyrinth suppuration after the radical mastoid. In reply to Wanner respecting the frequency of labyrinth operations, he drew attention to the fact that in Vienna they had only had 100 labyrinth operations in two and a half years, although their annual clinic numbered 12,000 to 15,000 patients.

Dr. SCHWARTZE (Halle) expressed himself as opposed to a hasty extension of operations on the labyrinth until the urgent need for such measures was generally admitted.

Dr. JOURY (Aran) held that we are nowadays more entitled to operate on the labyrinth because we are more fully acquainted with the reactions of the internal ear towards infection of the tympanic region. The different varieties of labyrinthitis and the breaking down of the barrier between

the middle ear and the endocranium were evident from certain well-defined signs. Did it follow from that circumstance that at the first attack, whether localised or diffuse, we ought to open extensively and to extirpate the greater part of the labyrinth? Apart from the fact that it was possible, while desirous of tackling an affection undoubtedly very serious, to provoke an affection necessarily fatal—meningitis, to wit, he believed that it was advisable to act with prudence and to avoid being too radical, all the more so as the results of bold and hasty operating were far from encouraging. And further, generally speaking, the best surgical measure, and that which was most satisfactory to the clinician, was not that which seeks to extirpate as completely as may be the affected organ to the uttermost limits, and even beyond the uttermost limits, of the disease in the hope of curing it. The surest method, in his opinion, was that which followed the clinical indications. In cases of purulent retention setting up septicæmia and pyrexia, and in cases of the hypertension of the humours whereby pain is provoked, simple opening, relief of tension, and drainage of the infectious focus were called for—only that, and nothing more; while at the same time the general powers of resistance were aided and augmented. And in these conditions it was known to all that in the infected labyrinth, in those cases which were capable of being cured, local reactions were sooner or later set up as a natural process which led to the encysting of the focus of disease and to its isolation from the dangerous neighbourhood of the meninges.

Abstracts.

NOSE.

Dickson, T. A.—*In Situ Antrum Trocar*. "Laryngoscope," May, 1910, p. 562.

A curved cannula fitted on to a trocar on the principle of the Lichtwitz trocar. After the antrum is punctured the cannula is left *in situ*, in order to permit of daily irrigation of the cavity without the necessity of puncturing anew each time. The cannula is provided with a "bump" to prevent its being blown out by the patient. The author recommends it in acute cases only.

Dan McKenzie.

PHARYNX.

Rolleston, J. D. (London).—*Vincent's Angina*. "The British Journal of Children's Diseases," July, 1910.

The author defines Vincent's angina as a faucial lesion, usually of unilateral distribution, characterised by deep ulceration of the tonsil and adjacent structures, a peculiar fætor, and enlargement of the corresponding lymph-glands, and ætiologically associated with the symbiosis of two organisms—a fusiform bacillus and a spirillum—described by Vincent in 1896 as present in hospital gangrene, and again in 1898 in the lesion to which his name has been given. He summarises the result of his experiences as follows: Vincent's angina is an uncommon disease, occurring in 0.9 per cent. of all cases of sore throat, and in 4.9 per cent. of cases of non-diphtheritic angina. During a five years' period of observation

in a hospital population of all ages the affection was confined to children between two and sixteen years. No instance of contagion were observed. Its incidence was greatest in the spring, least in the autumn. It was not found to show any predilection for weakly children or for cases of oral sepsis. There is nothing characteristic in its prodromal symptoms. There are not two distinct varieties of Vincent's angina. The ulcerative is merely a later stage of the membranous form. Constitutional symptoms are slight or absent, but the local affection is more pronounced than in diphtheria. Association with other diseases is uncommon. The prognosis is favourable. Complications are infrequent and usually insignificant. Treatment consists in the local application of tincture of iodine or methylene-blue powder. Internal medication is usually unnecessary.

Dundas Grant.

THYROID.

Mumford, J. G.—*Graves' Disease.* "Boston Med. and Surg. Journ.," June 2, 1910.

The author's conclusions are: (1) Graves' disease is due to abnormal activity of the thyroid gland. (2) In advanced cases degenerative changes in the gland may lead to a shifting symptom-complex, ending at last in the positive signs of myxedema. (3) The histology of the gland in Graves' disease indicates shifting, advancing, and retrograding symptoms. (4) An enlarged thymus is nearly always found *post-mortem* in patients dead of Graves' disease. (5) Advanced Graves' disease may exist without the presence of all the classical symptoms. (6) The disease can nearly always be cured if taken early. (7) The sera of Rogers and Beebe cure a goodly percentage of cases. (8) Through neutral hydrobromate of quinine, as used by Forebheimer and by Jackson, is found a large percentage of improvements and of cures. (9) More than 70 per cent. of patients are cured by partial thyroidectomy. (10) Treat the case early by rest, by sera and hydrobromate of quinine; if no improvement results in two months operate by thyroidectomy, and always regard the operation as the surest cure.

Macleod Yearsley.

EAR.

Randall, B. A. (Philadelphia).—*How far is Heredity a Cause of Aural Disease?* "Amer. Journ. of Med. Sci.," July, 1910.

The writer deprecates the tendency displayed by some authors to ascribe undue importance to hereditary influences in the causation of ear disease. Especially in regard to otosclerosis he considers it very doubtful whether heredity plays the important *role* so often assigned to it, and points out that the proof of genuine otosclerosis being, even in observed cases, far from positive, must in the unexamined relatives rest almost on pure assumption. He attributes some importance to a special susceptibility of the mucous membrane in some families to catarrhal troubles, and holds that some influence should be ascribed to peculiarities of structural configuration which are certainly inherited. He claims, therefore, that predisposition alone can fairly be claimed as a factor in the inheritance of ear disease, and the degree of this is not likely to be agreed upon by the authorities.

Thomas Guthrie.

Bourguignon, R. (Val-de-Grâce).—*Pouching of the Tympanic Membrane in Acute Suppurative Otitis.* "Arch. Internat. de Laryngol., d'Otol., et de Rhinol.," January-February, 1910.

The three situations in which bulging of the membrane are usually found are:

- (1) The posterior superior segment.
- (2) Shrapnell's membrane.
- (3) The inferior segment.

In the first position the perforation is usually found with a drop of pus showing; inflation of the middle ear demonstrates the nature of the swelling.

In the second position an acute case has passed into a chronic condition, and is usually associated with intense pain simulating meningitis, indeed, intracranial complications are common in untreated cases.

The nature of the swelling in the third position is easily recognised; a considerable loss of membrane usually results.

The author gives the differential diagnosis of—

- (1) Furuncle of the meatus.
- (2) Myringitis.
- (3) Periostitis of the meatal wall.

Furunculosis is intensely painful when touched; the membrane when seen is normal.

Myringitis is secondary to naso-pharyngeal infection; the bulging of the membrane is tense, whereas in acute otitis it is usually flaccid. When the middle ear is inflated the shape of the swelling alters, and this is not so where there is pus. The colour of the membrane is not of much diagnostic value.

The origin of the swelling in cases of periostitis is usually easily found by using the probe.

The localised character of the tympanic bulgings are due to adhesive processes taking place in the mucous membrane, and the posterior superior quadrant is usually affected because of its close contact with the Eustachian tube, the usual channel of infection. As regards treatment, a free opening should be made into the centre of the bulging.

Anthony McCall.

Mann, A.—*Injury of Ear by Hat-pin.* "Brit. Med. Journ.," July 9, 1910.

The membrane did not appear to be perforated, but a scratch was seen close to it, in the floor of the meatus. Giddiness, tinnitus, collapse, and deafness occurred, but the tests are not given with sufficient clearness to be of any value. It is suggested that partial dislocation of the stapes occurred, but the reasons for this diagnosis, which does not appear to be a very correct one, are not given.

Macleod Yearsley.

Winckler, E. (Bremen).—*Retro-auricular Openings after the Radical Mastoid Operation, and their Plastic Surgery.* "Arch. f. Ohrenheilk.," Bd. 75, Heft 1 and 2, March, 1908, p. 76.

In performing the mastoid operation the author sometimes deliberately leaves the post-aural wound open in order to facilitate inspection and to further epidermisation. He prefers to do so in the following circumstances: when the fear of labyrinth complications renders a careful watch over the inner wall of the antro-tympanic cavity advisable; when there is suppuration of the tympanic ostium of the Eustachian tube and

of the "tube-cells"; when the case has to pass out of the hands of experts shortly after operation; in suspected or undoubted tuberculosis of the middle ear; and especially in the more active kinds of cholesteatoma.

The methods by which the fistulous opening is lined with skin-flaps and by which it is subsequently closed are detailed—a portion of the paper which would be rendered clearer by the provision of some diagrams.

This kind of epidermisation and subsequent closure are not advisable in cholesteatomatous cases.

Dan McKenzie.

Bowen, W. H., and Carlyll, H. B.—*A Case of Sarcoma of the Petrous Bone.* "Brit. Med. Journ.," June 25, 1910.

The patient was a child, aged nine months, admitted for polypus of the left ear with purulent discharge. Death occurred, after operation, about ten weeks after admission, the growth increasing rapidly. Microscopically, it was a "typical round-celled sarcoma." The child's sex is not stated.

Macleod Yearsley.

Yearsley, Macleod.—*A Case of Sudden Deafness occurring during Eclampsia.* "Lancet," February 26, 1910.

Woman, aged forty, with severe unilateral nerve-deafness. Physical and functional examination fully described. The writer believes the condition was due to blocking of the cochlear branch of the auditory artery. He has been unable to find any other case of deafness during eclampsia in the literature.

Macleod Yearsley.

Thornton, Bertram.—*On Certain Uses of Vaso-Constrictor Drugs.* "St. Mary's Hosp. Gazette," January, 1910.

The author advises in attacks of migraine and in Ménière's symptoms, or tinnitus due to dilatation of vessels in the labyrinth, a pill containing half a grain of digitalis folia and gr. ij of extract of ergot three times a day.

Macleod Yearsley.

Dench, G. B.—*The Treatment of Acute Otitic Meningitis.* "The Amer. Journ. of the Med. Sci.," February, 1910.

The author divides cases of otitic meningitis into four classes: (1) Extra-dural abscess; (2) general serous meningitis; (3) localised sub-dural meningitis; (4) general purulent meningitis involving the sub-dural space and the lateral ventricles. Of 101 cases of otitic meningitis in literature 45 were cured. Dench has operated upon 65 cases with 51 recoveries; 54 of the 65 belonged to the first class; 11 were general meningitis and but 3 of these recovered, all being of the second class. Dench summarises treatment as follows: For prophylaxis in all cases of middle-ear inflammation the drum should be early and freely incised. With the first symptoms of meningitis the focus of infection should be removed by the mastoid or complete radical operation. If the meningeal symptoms are pronounced lumbar puncture should also be performed, a procedure upon which much stress is laid. In still more severe cases a decompression operation is indicated with incision of the dura, and in extreme cases the lateral ventricles are to be drained. The technique of decompression and of drainage of the ventricles is described in detail.

Macleod Yearsley.

REVIEWS.

Physiology and Pathology of the Semi-circular Canals. By ADOLPH E. IBERSHOFF, M.D., and a foreword by ROYAL S. COPELAND, A.M., M.D. New York: Paul B. Hoeber; London: H. K. Lewis, 1910.

Among the aids to the study of the labyrinth, especially in the light of the nystagmus excited by disturbances in that portion of the auditory apparatus, the compact handbook prepared by Dr. Ibershoff is one of the most recent. It professes to be mainly an "excerpt" of a translation of Bárány's monograph on "The Physiology and Pathology of the Semi-circular Canals." That work has seemed to the reviewer to be capable of some classification and condensation, and Dr. Ibershoff has to a considerable extent succeeded in effecting both these desirable objects. Despite a few defects, we can conscientiously recommend it to those who feel a difficulty in grappling with this obscure subject, feeling sure that it will remove some of their uncertainties, if not all. We regret to see a tendency to detract from Dr. Bárány's undoubted priority in the formulation of the now recognised tests for the functional activity of the labyrinth (p. 38). In the comparative lists of the symptoms diagnostic of labyrinthitis and cerebellar abscess from each other, arranged (for the student's delight) in parallel columns, the two sets have been reversed on the last page. No doubt the accidental error will be at once perceptible, but it is an unfortunate slip on the part of the printer or corrector of the proofs. We might note that in this country the term "carousal" is not the counterpart of the French or German *carrousel*, which we call a "merry-go-round" or "roundabout." The work has too many good features for these small errors to detract materially from its excellence, and we should have been sorry to have lost the opportunity of reading it. It contains some illustrations, which will be found most useful both in teaching and learning. D. G.

Diseases of the Nose and Naso-pharynx (Die Krankheiten der Nase und des Nasenrachens mit besonderer Berücksichtigung der Rhinologischen Propädeutik). By Dr. CARL ZARNIKO, of Hamburg. Third revised edition with 166 illustrations and 5 plates. Berlin: S. Karger, 1910.

The third edition of this excellent work, the original volume of which was published in 1895, will be welcomed by all students of the speciality. Only two new chapters have been added, but the author has carefully revised the whole book, and no pains have been spared in making interesting those parts of the subject which are most difficult to understand; this is specially so in those chapters dealing with anatomy and physiology. In dealing with anatomy the intricate arrangement of the ethmoid labyrinth has been very cleverly and clearly set forth. By means of diagrams of actual specimens this difficult subject has been treated in such a way as to give the reader an excellent idea of this portion of the anatomy of the nose. The lateral nasal wall has also received careful consideration, stress being laid on those points which are of clinical importance.

The chapters on general pathology make interesting reading. Attention is drawn to the dangers resulting from mouth-breathing in children. The

author lays stress on the bad effect of this condition on the general constitution, while the peculiar effect on the character and temperament of the child is also noted. The close connection between ocular changes and pathological changes in the nose is well shown, but a great lack of illustrations is here felt, as well as in the whole section on pathology.

The subject of diagnosis has been very cleverly treated. The essential features necessary for a thorough knowledge of this difficult subject have been well set forth. Transillumination as an aid to diagnosis in sinus troubles has, however, been dismissed in rather a short fashion.

In dealing with the various pathological conditions met with in the nose and post-nasal space the author shows a widespread knowledge of his subject, and his opinions are supported by numerous references.

Treatment has very been thoroughly dealt with, and where operative interference is necessary the various operations are explained, so that the reader is given a number to choose from, and is thus able to suit the requirements of the individual cases.

Considerable space is devoted to the treatment of sinus affections, both chronic and acute. The chapters are very well arranged and make most interesting reading. In the diagnosis of maxillary and frontal sinus suppuration, however, there is no use made of transillumination and Röntgen rays as aids to diagnosis. Turner, of Edinburgh, has clearly shown what valuable aids these are, and also in the case of the frontal sinus their great value in deciding as to operative interference.

Zarniko has presented to us a book most cleverly and carefully written. The teaching of the Berlin school has been closely followed. This new edition makes a valuable contribution to our literature on the subject of nasal conditions.

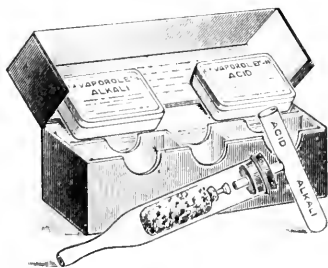
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THE
JOURNAL OF LARYNGOLOGY,
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PROFESSOR EMIL ZUCKERKANDL.

WE regret to observe that on May 28 the renowned Prof. Zuckerkandl departed this life after having been a teacher in the subject of anatomy for more than a quarter of a century. He was born in Hungary in 1849, and was thus a countryman of many of the most distinguished figures who have adorned the University of Vienna. His work formed the genuine scientific foundation of modern rhinology, and it is with pleasure that we recall the fact that the superstructure which rests on it has been enlarged, and is still being expanded by his fellow countryman, Onodi. It may be said that since the publication, in 1882, of Zuckerkandl's book on the normal and pathological anatomy of the nose and its accessory pneumatic cavities, his name has been constantly in the mouths of all who study or teach rhinology. We have often, in the discussions in special societies and sections, heard his works referred to by those desirous of finding arguments to confound an opponent; in point of fact, the work "Zuckerkandl" was almost as satisfying to the rhinologist as "that blessed word, Mesopotamia," to the old lady in the well-worn story. Prof. Heymann gives a sympathetic obituary account of him in Semon's *Internationales Centralblatt* for July of the present year, in which a long list of his contributions to rhino-laryngology will be found, and he refers to the interesting and significant fact that in the most famous hand-books on diseases of the upper food- and air-passages it was Zuckerkandl who was

generally called upon to supply the section on the anatomy of the parts. Thus, in Scheff's handbook on diseases of the teeth, the chapter on the macroscopical anatomy of the mouth and teeth is the work of Zuckerkandl, as is also the section on the anatomy and development of the larynx and trachea in Heymann's important handbook.

As Heymann feelingly states, "His pupils—and who of the rhino-laryngologists has not been his pupil?—and the innumerable investigators whom he has guided and stimulated in the most kindly way, will always preserve a grateful remembrance of him."

AURAL TUBERCULOSIS IN CHILDREN.¹

BY WILLIAM MILLIGAN, M.D.

MR. PRESIDENT AND GENTLEMEN,—The heroic efforts which have been and are being made to drive tuberculous, which in one or other form is responsible for from 7 to 10 per cent. of the existing death-rate, from the face of the habitable globe demand our most hearty sympathy and encouragement. In our own special department the incidence of tuberculous otitis media is of much more common occurrence than is usually supposed, and the high mortality in childhood, to say nothing of the irreparable damage to the ear as an organ of special sense, renders it imperative that the real nature of the disease should be recognised at as early a stage as is possible, and that suitable treatment, local, operative, and hygienic, should be instituted without delay. The difficulties of accurate diagnosis are by no means small, and mainly for the reason that the stage of pure tuberculous infection is often a comparatively short one, while the superadded and mixed infection, pathogenic or saprophytic, which is almost invariable, masks the true nature of the original and underlying pathological process.

The exact frequency of tuberculous otitis media is difficult to estimate, for the reason that so far we know very little about the incubation period of tubercle, and whether tuberculosis arises from an infection which may enter the body at any time of life, and by one or other channel, or whether it is the ultimate development of an infection which has obtained access during the milk-drinking period of life. Certain it is that so far as infection of the middle-ear cleft is concerned, the vast proportion of cases of primary

¹ Read at the London Meeting of the British Medical Association, July, 1910.

tuberculous otitis media occur in infancy and childhood. In fact the occurrence of cases in infants a few weeks old might almost suggest that the disease is, in some cases at least, of ante-natal origin and due to a maternal blood infection. That tuberculous otitis media occurs with much greater frequency amongst the children of the poor than amongst those of better social position will I think, be readily admitted. Is this due to the different methods of feeding adopted or to want of attention to the pasteurisation of the milk supply, or is it due to aërial infection contracted in ill-ventilated, damp, and unhygienic dwelling rooms?

In my experience about 20 per cent. of hospital children under six years of age suffering from purulent otitis media owe the origin of the disease to an underlying tuberculous infection. This percentage, Mr. President, may appear to many here to be somewhat high, but if trouble is taken to carefully unravel the real nature of the existing facts either by the application of some test such as the Von Pirquet cuti-reaction, Calmette's ophthalmoreaction or inoculation experiment, the number of cases giving a positive result, and that in the entire absence of other demonstrable clinical evidences of tuberculosis, will be found much greater than usually suspected. For this reason, as well as for many others, a discussion upon aural tuberculosis in childhood seems to me peculiarly appropriate, especially at a time when the best efforts of the profession, ably supported by a large section of an enlightened public, are being directed towards the mitigation of the ravages, and, if possible, the complete abolition of this preventable disease. The various problems to be faced will be much simplified by an intelligent appreciation of the pathology of tuberculous otitis media, and by the recognition of the fact that the disease in childhood especially is frequently primary in and around the middle-ear cleft.

By many authorities, chief amongst whom is the *doyen* of our speciality, Prof. Politzer, whom we had hoped to have seen here to-day, the primary origin of the disease is considered to be rare. To this view I am unable to subscribe, the result of my observations tending to show that in infants and young children it is distinctly common.

While not denying for one moment its comparative frequency as a complication of pulmonary phthisis, especially with cavitation, it must be borne in mind that pulmonary phthisis in young children is rare and cavitation is exceptional. From this it might be deduced that the disease was rare in infants and young children. The very

reverse is, however, the case, tuberculosis of the middle-ear cleft occurring, in my experience at least, more frequently in infancy than at any other period of life, and showing a tendency to diminish after the fourth year.

When due to blood infection it may start in the cancellous tissue of the petro-mastoid, when to inhalation or ingestion of tuberculous material in the mucosa of the middle-ear cleft, the latter pathway being, in my opinion, in children the more frequent of the two. Detailed histological observations of the early stages of primary tuberculous otitis media are not, however, very numerous. This is due in part to the subtlety of the disease, and in part also to its being so frequently complicated with suppuration, which masks its real nature. It should be borne in mind that the tubercle bacillus is not a pyogenic organism *per se*, and that, therefore, when discharge from the middle ear is definitely purulent organisms other than the tubercle bacillus must be held responsible. The essential feature of any tuberculous lesion, whether of mucous membrane or of bone, is multiplication of epithelioid cells (endothelial and perithelial), which, in course of time, completely replace the normal elements of the structure. The foci or tubercles thus formed, owing to absence of blood-vessels, die and caseate.

Surrounding each tubercle or epithelioid focus is a widely spreading zone of lymphocytes, which wander among the normal elements of the region attacked.

Mingled with these epithelioid clusters are giant-cells formed either by fusion or by nuclear multiplication without cytoplasmic division. Bacilli are, for the most part, to be found in the peripheral zone where epithelioid elements and lymphocytes intermingle. They are, however, comparatively seldom found in "giant-cells." In any pure tuberculous infection active destruction of tissue is never frequent.

When, however, the process is complicated by the presence of pyogenic bacteria, as is generally the case, leucocytes are numerous both in the inflammatory focus and in the discharge. An uninfected tuberculous discharge from the ear has certain definite characteristics. It is of a thin, watery, and for the most part of an odourless character containing white or grey granules, or flakes. Lymphocytes are invariably abundant, while leucocytes are relatively few, are granular, and possess pale and fragmented nuclei. Giant-cells may as a rule be found if searched for in the tuberculous area. Some difficulty may arise in definitely identifying the tubercle bacillus from the fact that other acid-fast bacilli are also present

at times in discharge from the ear, such as certain streptothricial forms—the *Bacillus subtilis*, *Bacillus butyricus*, etc. These organisms differ, however, from the bacillus of tubercle, not only morphologically, but also by their staining properties. They are acid-fast, but readily yield up the fuchsin stain when washed in alcohol, which the tubercle bacillus does only after prolonged soaking. Many bacilli found in the discharge from the ear assume acid-fast properties, probably from the presence of butyric acid, a product of decomposition which gives it such a characteristic odour. It must also not be forgotten that old epithelial squames are acid-fast and that their fragments may be mistaken for tubercle bacilli.

The changes induced as the result of the deposition of the tubercle bacillus within the mucosa of the middle-ear cleft vary according to whether the morbid process runs an acute or a chronic course. In acute cases tubercles are numerous, and break down at an early stage with a resulting loss of tissue. If deposited upon the membrana tympani perforation is prone to take place at an early period of the disease, followed by the extrusion of pale œdematous and succulent granulation tissue. From the fact that two or more tubercles are often deposited upon the membrane, multiple perforations are not uncommon, while a coalescence of several perforations leads to extensive loss of tissue. When tubercles are seen upon or through the membrane, they appear as sharply defined pearly grey spots surrounded by an uninfamed mucosa.

Although acute tuberculous infection of the tympanic mucosa undoubtedly occurs, the chronic type of disease is much more common and more important from a clinical and practical standpoint. The deposition of tubercle bacilli in the muco-periosteum of the antro-tympanic cavity frequently leads at quite an early stage to infection of the underlying bone, and to subsequent cario-necrotic changes, often extensive, and as a rule quite painless.

Accompanying this cario-necrosis there is at times an exuberant production of pale granulation-tissue, which if microscopically examined may show areas of caseation, giant-cell formation, etc. Progressive cario-necrosis leads in time to exposure of the dura mater, the facial nerve, or the contents of the internal ear. In fact, one of the very early, and one might almost say, pathognomonic symptoms of tuberculosis of the middle ear is the appearance of facial paresis or paralysis.

This early appearance of facial paralysis is due to ulceration of the walls of the Fallopian aqueduct, with exposure of the nerve.

In infants and young children this ulcerative process is favoured by its incomplete ossification.

The extensive destruction of the tympanic mucous membrane which accompanies all tuberculous middle-ear lesions leads to infection of the ossicular chain, with subsequent exfoliation of one or more ossicles. In fact, in no other type of middle-ear disease are the ossicles so frequently infected and destroyed. So much is this the case that Haike (*Archiv f. Ohrenheilk.*, vol. xlviii, 1889) considers caries of the foot-plate of the stapes to be a pathognomonic symptom of tuberculosis. Tuberculous disease shows also a marked predilection to attack young and growing bone. So far as the petro-mastoid is concerned the possibility of injury, *e.g.* the use of forceps during delivery acting as an exciting cause, should not be forgotten. The amount of painless destruction of the temporal bone, often with no external evidences of its presence, is at times remarkable. In several cases coming under my observation *post-mortem* examination has revealed almost complete destruction of the cancellous tissue of the petro-mastoid upon both sides, a mere shell of compact bone remaining upon which the middle fossa is poised.

In infants and young children destruction of bone is generally greater than in adults. In most of the cases the changes in the bone are brought about by progressive carious disintegration, although sequestration from necrosis is by no means uncommon. Sequestra may involve such important structures as the Fallopian aqueduct, the cochlea, the semi-circular canals, etc.

Erosion of the outer table of the pars mastoidea is, in my experience, not of such frequent occurrence in tuberculous as in non-tuberculous cases, the tuberculous disintegration showing a peculiar affinity to attack the cancellous rather than the compact portions of the temporal bone. On the other hand, however, I have met with many cases where, after making the post-aural incision, the cortex was seen to be perforated, and a large fistula found filled with a creamy white material of the appearance and consistence of putty. From the complete absence of external signs and symptoms it would appear as if the periosteum offered greater resistance to the spread of disease than the bone itself. Perforation of the inner wall of the mastoid process, and the formation of an abscess under the deep cervical fascia, *Bezold's mastoiditis*, I have found to be comparatively rare. Grimmer, on the other hand, holds that it occurs in about 20 per cent. of tuberculous cases.

Early enlargement of the peri-auricular glands is peculiarly characteristic of primary tuberculous otitis media, and is in many cases the first definite objective indication of disease. According to Jobson Horne glandular involvement is, however, rare in cases of tuberculous otitis media secondary to tuberculosis in other parts of the body.

Those first attacked are the mastoid glands, then the deep glands of the posterior triangle, and finally the parotid and retro-pharyngeal. Sections of these enlarged glands reveal the presence of such changes as the formation of tubercles, giant-cells, and areas of caseation.

In course of time the infective process spreads to surrounding glands until large masses are formed, often matted together by intercurrent attacks of peri-adenitis, and exhibiting on section the various stages of degeneration, caseation, suppuration, and even calcification. So long as degeneration and breaking down has not taken place they act as a first line of defence preventing the dissemination of bacilli, and hence for a time, at least, serve a useful purpose.

Infection of the meninges, the result either of direct extension of disease or as part of a general miliary tuberculosis, is not uncommon. In my experience the route of extension is most frequently by way of the internal ear to the pia-arachnoid meshes of the posterior cranial fossa, although it may also result from organisms passing through the lymphatic channels of the unossified petro-squamosal suture.

The occurrence of a tuberculous brain abscess is very rare. When an intra-cranial abscess is found complicating tuberculous otitis media it is almost invariably of pyogenic origin.

CHANNELS OR AVENUES OF INFECTION.

The avenues along which tubercle bacilli travel to effect an entrance into the middle-ear cleft are:

(1) Aërial—air passing up the Eustachian tube and depositing bacilli upon its lining membrane—respiratory tuberculosis.

(2) Lymphatic—along various lymph-channels leading from adjacent tubercular foci.

(3) Vascular—along blood-vessels following the entrance of bacilli from the respiratory or digestive canals.

(4) Through the lymphoid and along the sub-epithelial collections of lymphoid tissue which exist in such abundance in the

pharynx and naso-pharynx, and also around the lumen of the Eustachian tube, bacilli being carried inwards by means of leucocytes, and often without any demonstrable lesion of the epithelium—aëro-lymphogenous.

(5) From the entrance of bacilli through a perforated membrana tympani.

(6) Through erosion of the dermic lining of the external auditory meatus.

The most common route of invasion, in adults at any rate, is by way of the respiratory system. I am inclined to think, however, that the importance of ingestion tuberculosis is, in this country at least, somewhat under-rated, and that the lymphoid tissue constituting Waldeyer's ring is a most important portal of entry. In many cases no local lesion may be evident, the first objective evidence of tuberculosis being noted in the presence of enlarged cervical glands. The relative frequency of respiratory and ingestion tuberculosis has been the subject of much study, with the result that it has been ascertained that, roughly speaking, from 70-75 per cent. of cases are of respiratory, and 25-30 per cent. of ingestion origin. The ingestion theory of tuberculosis appears to me to be gaining ground, more especially since the publication of papers upon the subject by Calmette, Guérin, Whittla, Symmers, and others. A fresh impetus has also been given to this subject by the publication of a paper by F. W. Jones entitled, "An Anatomical Inquiry into the Pathway of Tuberculous Infection," in which he demonstrated the rôle played by the thoracic duct in the incidence of apical phthisis and spinal caries.

The fact also must not be overlooked that many cases of primary tuberculous mastoiditis in infancy are the direct result of a blood infection.

In infants and young children, among whom cases of primary tuberculosis of the middle-ear cleft are most frequent, I believe, as the outcome of observation extending over fifteen years, and including the records of a large number of clinical cases and *post-mortem* records, that one of the most frequent avenues of infection is from the entrance of the bacillus through the pharyngeal and naso-pharyngeal mucosa and thence along the subepithelial lymphatics and conglomerations of adenoid tissue to the middle ear. Assuming this to be true, how is the entrance effected? My theory is that the bacillus is swallowed with the milk upon which the child is fed, that the regurgitation of food which is so common in young children forces portions of the now semi-digested milk into

the tonsillar crypts, the naso-pharyngeal cavity, and the neighbourhood of the Eustachian tubes. In infants and young children the Eustachian tubes are shorter and wider than in adults, whilst their pharyngeal orifices are situated somewhat nearer the corresponding choanæ and oral cavity than in the adult. It has been alleged, however, that the class of infants among whom aural tuberculosis is most rife are, as a rule, breast-fed. While granting that this is so up to a point, it is surprising how many of the children, even of the very poor, are partially, at least, bottle-fed, thus bringing them more directly under the mechanism of air-borne and deglutatory influences.¹ As is now well known the bacillus has the power of penetrating the mucosa, leaving it intact, and so of gaining an entrance into the submucous lymphatic plexuses. This theory is, to my mind, substantiated from the fact that I have found, on section, tuberculous adenoid tissue around the Eustachian tube from its naso-pharyngeal to its tympanic orifice. It is also possible that the regurgitation and suction movements of the child, by causing a negative pressure in the post-nasal space, initiate aerial currents which carry bacilli towards the tympanum.

This leads me, Mr. President, to digress for a moment and to touch upon the rôle played by tuberculous milk in the production of tuberculosis of the middle-ear cleft, and also of abdominal viscera, mesenteric glands, etc. The importance of a pure and cheap milk supply cannot be exaggerated, and despite the enormous labour already expended—and in no city more than in Manchester—in endeavouring to secure a pure supply, much yet remains to be done by local authorities in the matter of the inspection of cows, cowsheds, milk-pails, and last, but by no means least, of the milkers and of those who handle the milk-cans. Many serious epidemics of scarlet fever, infantile diarrhœa, and tuberculosis have been definitely proved to have been brought about by an impure milk supply, and of all diseases attributable to this, tuberculosis in children is the most important.

In the report of the Royal Commission (1895) which investigated "the effect of food derived from tuberculous animals upon human health," the following significant paragraph occurs: "*The largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter.*"

The amount of milk consumed in any large community is very

¹ In Edinburgh it has been estimated that about 35 per cent. of the women attending the Dispensary feed their children upon the bottle from the very commencement, or at the most nurse for a period not exceeding six months.

great, and if by chance it is the product of tuberculous cows—and investigation shows that it very frequently is so—the incidence of tuberculous, in infants and young children especially, is bound to follow. I am indebted to Prof. Delepine, whose researches in this particular field of inquiry are so well known, for the information that in 1908 it was estimated that 62,525 gallons of milk were delivered daily in Manchester, the production of at least 30,000 cows. In 1897 and 1898, 45 per cent. of the samples of milk submitted to analysis were found capable of producing some kind of lesion (including tuberculous). As the result, however, of the vigorous and able policy adopted by the local sanitary authorities, this percentage had, in 1906, fallen to 14.4 (including tuberculous), and is still falling.

In a few of my cases of tuberculous otitis media occurring in infants reared upon the bottle and where no family history of tuberculous was obtainable in either parent, I have carefully investigated the source of the milk supply, and in three instances have found that the little patients were being reared upon milk from cows possessing tuberculous disease of the udder. I believe that the milk of cows suffering from tuberculous mastitis is a most important means of transmitting bovine tuberculous to infants, and that one of the first steps to be taken in helping to eradicate human tuberculous should be the eradication of bovine tuberculous, which I regard as a real menace to the health of the rising generation.

In a very able report by Dr. A. G. Anderson, Medical Officer of Health for Rochdale, the following paragraph appears:

“When the udder is infected, which is invariably secondary to disease of the internal organs, the milk will always be infected and dangerous, and it is calculated that about 2 per cent. of our milch cows have tuberculous udders. There are over 4,000,000 milch cows in Great Britain, which gives 80,000 with tubercular udders. Putting the annual yield of 500 gallons of milk per cow there is produced every year 40,000,000 gallons of milk which, if not actually virulent, is not above suspicion.”

Hence the great importance of feeding children with milk from tuberculin-tested cows or with milk which has been carefully pasteurised.

While attaching very great importance to this particular mechanism of infection, I also believe that a large number of patients are aërially infected. If one considers for a moment the surroundings of the great majority of cases of tuberculous otitis

media, the vast proportion being hospital patients often from the poorest districts of our large cities, one cannot help being struck by the extraordinary ignorance of parents in the matter of the clothing and the feeding of their offspring, and in the provision of fresh air in the overcrowded sleeping rooms where other tuberculous contacts may be sleeping. The mixing also of large numbers of children, often with running ears, or with ears to which semi-desiccated crusts of discharge are adherent, or ears stuffed with highly septic and decomposing pledgets of cotton-wool in school-rooms not always particularly well ventilated, is, in the light of our present-day knowledge, almost certain to be the means of disseminating disease and of infecting other children whose powers of resistance are incapable of withstanding bacillary invasion.

SYMPTOMS.

I know of no one particular symptom, subjective or objective, which is pathognomonic of tuberculous otitis media. Certain signs and symptoms, however, taken collectively make up a picture which the aural surgeon has little hesitation in pronouncing as typical of tuberculous infection of the middle-ear cleft. These symptoms are the painless onset of the disease, the absence of inflammatory reaction, the frequent presence of two or more perforations, the early appearance of enlarged peri-auricular glands and facial paralysis.

The painless onset of the disease is in marked contrast to the acute and painful course of a pathogenic infection of the middle-ear cleft. In no other middle-ear lesion, sarcomatous disease of the tympanic mucosa excepted, is the complete absence of pain so marked a feature. In a series of cases examined with special reference to the presence or absence of pain the onset of the disease was apparently quite painless in 85 per cent. This anomaly is by no means easy of explanation, but is usually said to be due to the very slow and insidious destruction of tissue and terminal filaments of the sensory nerves of the part.

Should a coincidental pathogenic infection exist at the same time, giving rise to acute swellings, pain of a more or less severe character may be present. In many cases two and sometimes three or four perforations are visible, while at times they coalesce, forming one large perforation occupying the greater portion of the membrana tympani. Prior to the stage of perforation the tubercles, to whose breaking down the perforation owes its origin, may be

seen upon the membrane or upon the mucosa covering the pars promontoria in those cases where the membrane is peculiarly translucent. In the ordinary type of case which runs a chronic and asthenic course the membrane appears pale and œdematous, and the edges of the perforation grey, inactive, and flabby. Where the greater portion of the membrane has been perforated the exposed inner wall of the tympanum is frequently found covered by œdematous granulatous tissue, which upon microscopic examination shows evidences of active tuberculous changes. To this particular objective appearance I attach considerable importance, the more especially when the underlying bone is found to be carious.

The presence of a perforation in the postero-superior segment of the membrane of painless origin, and unaccompanied by sthenic symptoms, is regarded by many observers as pathognomonic of tuberculous otitis media. In my opinion there is in all cases of tuberculous infection of the middle ear with perforation an absence of that distinct inflammatory reaction so invariably seen in cases of phlogogenic origin.

Reference has already been made in considering the pathology of the disease to the fact that early and extensive enlargement of the peri-auricular glands is almost constant, and I would here state that in several cases I have found glandular enlargement to be the first objective indication of the disease before even perforation has taken place, and prior to the occurrence of facial paralysis.

Facial paralysis is not only extremely frequent, but is also met with at a very early stage of the disease. In a series of tuberculous cases which I have collected it was found in 65 per cent., whereas in an equal number of non-tuberculous cases it was found in only 2 per cent. In another series of tuberculous cases collected by Paul Matthews it was found in 33 per cent, while in 658 consecutive cases of non-tuberculous otitis media collected by our *confrère* Richard Lake it was found but four times. Whatever the exact percentage may be, whether 30, 40, or 60 per cent., the above figures are very striking, and tend to substantiate Grimmer's contention that its presence may be regarded as almost pathognomonic of tuberculous in cases of chronic otorrhœa.

In infants and young children it is somewhat difficult to detect minor degrees of facial paresis, owing to the absence of lines and folds upon the face and owing to their inability to whistle.

The almost invariable presence of caries or cario-necrosis in

tuberculous otitis media serves to explain the frequency with which facial paresis or paralysis is met with. The position of the Fallopian aqueduct and its frequently incomplete ossification renders it liable to attack, with consequent erosion and exposure of the facial nerve. The resulting neuritis may come on quite suddenly, and may involve the whole thickness or only a portion of the nerve-trunk.

Extension of disease to the pars petrosa by way of the fenestrae or erosion of the promontory leads frequently to early implication of the static or acoustic segments of the internal ear. The insidiousness of the process, however, prevents, as a rule, the occurrence of symptoms of the Ménière type. Severe, if not complete, nerve-deafness is, however, very common.

THE DISCHARGE.

The discharge from the middle ear is, as a rule, copious, thin, and sanious. It is frequently extremely foetid, owing partly to its origin being from broken down and carious bone, and partly from secondary infection with putrefactive organisms, *e. g.* the *Bacillus butyricus*, *Spirochæta fortida*, etc., which gain access through the perforated membrane. When a pyogenic infection is superadded, as frequently occurs at an early stage, it is thick, muco-purulent, and curdy. The presence of blood in the discharge is due to the existence of exuberant granulations associated with osseous lesions. If a droplet be rubbed between the fingers it imparts at times a gritty sensation from the presence of spicules of bone.

DIAGNOSIS.

A diagnosis of antral tuberculosis is by no means always easily made. The various clinical signs and symptoms already detailed are highly suggestive of the tuberculous nature of the disease. To verify the diagnosis it is, however, necessary to discover the bacillus in the discharge from the infected middle-ear cleft or in tufts of granulation tissue or portions of diseased bone removed by operation or exfoliated by disease, or to produce experimental tuberculosis in animals inoculated with products from the diseased ear.

The finding of bacilli in the discharge from the ear is admittedly hard, partly on account of the small number which may be present, but more particularly on account of the frequent presence

of other acid-fast bacilli and the difficulty of distinguishing them from the bacillus of tubercle.

Chief amongst these are the bacillus of leprosy, Lustgarten's bacillus, the *Bacillus smegmæ*, the bacillus of Timothy grass, the butter bacillus, and others associated with fœtid pulmonary suppuration.

In a series of 100 samples of discharge from the ear examined microscopically and bacteriologically by Wyatt Wingrave, in twenty-four acid-fast bacilli were found, and the inoculation test showed that in seventeen the bacillus was the bacillus of tubercle. I cannot agree with Nathan (*Deutsche Archiv f. klin. Med.*, vol. xxv), who affirms that the bacilli can be found in the discharge in every case of tuberculous otitis media. My own experience, rather, is that their presence in the discharge is so inconstant, except in acute and very early cases, and the practical difficulties of finding them are so great that some other method of diagnosis should be adopted, the more so when we recollect that tubercle bacilli are readily destroyed in the presence of other putrefactive organisms. A more certain method of diagnosis is the examination of portions of tufts of exuberant granulation-tissue removed from the depths of the tympanum. Such tufts show at times evidence of active changes, *e. g.* giant-cells, areas of caseation, bacilli, etc. The most exact and reliable method of diagnosis, however, with which I am acquainted is the inoculation of guinea-pigs with portions of bone or granulation-tissue removed from the advancing edge of disease. Either the subcutaneous or the intra-peritoneal method of inoculation may be adopted. My own observations have been mainly confined to subcutaneous inoculations, the animal's left hind limb being carefully shaved, washed with weak carbolic lotion, and gently singed with a flat platinum needle at a white heat. A small pocket is made under the skin above the knee-joint with a sterilised knife, and into this pocket a scraping of bone is introduced with sterilised forceps. The wound is then sewn up and a sterile dressing applied. Within a fortnight, provided that the material is tuberculous, the superficial inguinal glands will be found enlarged. Towards the end of the fourth week the ganglia of both fore-limbs and also the cervical ganglia are, as a rule, also enlarged. If the animal be now killed, and scrapings taken from the enlarged glands, bacilli will be found in abundance. At times, at the seat of inoculation, an abscess will be found containing enormous numbers of bacilli.

Should the intra-peritoneal method be preferred the tissue

removed from the ear should be pounded in a mortar with sterile salt solution, and injected into the peritoneal cavity.

As, however, this method of diagnosis is somewhat elaborate, and entails the possession, in this country at any rate, of a licence to vivisect, the simpler methods of Von Pirquet (cuti-reaction), Calmette (ophthalmo-reaction), Moro (percutaneous), or of Montaux (the intra-dermo-reaction) may be adopted.

The adoption of one or other of these methods is of great value in the diagnosis of cases of suspected tuberculosis. That a positive reaction is obtained does not, of course, establish the fact that the middle-ear lesion is tuberculous, as other tuberculous foci may be present in other tissues and organs to the presence of which the positive reaction is due. If, however, careful clinical examination has shown other organs to be apparently healthy, the presence of a positive reaction is strong presumptive evidence of the tuberculous nature of the ear lesion, especially when its advent has been characterised by an asthenic course, by the early implication of the peri-auricular glands, and by the early onset of facial paralysis.

The characteristics of a positive Von Pirquet's cuti-reaction, redness, sharp demarcation, infiltration, and the appearance of a papule with or without surrounding vesiculation, are diagnostic. In conjunction with my house-surgeon, Mr. Frank Wrigley, I have during the past few months tested twenty-four cases of suspected tuberculous otitis media in children under seven years of age. In twenty a positive reaction was forthcoming, while the actual tuberculous nature of the ear lesion was subsequently verified either as the result of microscopic examination or inoculation experiments. Our experience has been that healthy children, at any rate up to ten years of age, do not react to Von Pirquet's cuti-reaction.

Finally, removal and examination of an enlarged peri-auricular gland may show definite evidence of tuberculous changes, and thus assist in clearing up the diagnosis.

PROGNOSIS.

In all cases a guarded prognosis should be given. In the primary form it is more favourable than in the secondary. The death-rate is certainly high, in my experience being nearly 50 per cent., and even if a fatal issue does not result, the difficulties encountered in effecting a complete arrest of the disease are great.

Age-incidence is of the utmost importance. The younger the patient is when infected the greater the risk and the more rapid the spread of the disease. In hospital patients the prognosis is distinctly worse than in private patients, while the possession of a tuberculous family history adds greatly to the gravity of the outlook.

The greater the area of glandular involvement, but not necessarily of glandular enlargement—I mean in the gross and palpable form—and the earlier the onset of facial paralysis the worse the prognosis. Early implication of the labyrinth is also an unfavourable omen.

The virulence of the bacilli present in the discharge or in tufts of exuberant granulation-tissue, as determined by the results of the experimental inoculation of animals, provides us with a fair means of estimating the severity of infection. The almost constant presence of cario-necrotic bone lesions and their well-known rôle in the production of miliary tuberculosis in children accounts to some extent for the high mortality. The prognosis in secondary infections, especially in phthisical patients, where there is frequently a rapid destruction of tissue largely the result of a superadded streptococcal infection, is most unfavourable.

The unsatisfactory results of treatment must also be considered in our estimate, for it is undeniable that many patients exhibit practically no reparative power, and succumb either from a generalised blood infection or septic complication.

TREATMENT.

Unfortunately the treatment of the majority of cases is begun too late, and this I believe is due to the insidiousness of the process and to the complete absence of pain. Moreover, the tuberculous nature of the disease is often not suspected until dissemination has taken place or until it is so far advanced as to render all attempts at its removal futile. In acute cases no time should be lost in establishing and in maintaining free drainage from the posterior end of the middle-ear cleft. The provision and maintenance of efficient drainage are of immense value, and if supplemented by the judicious injection of tuberculin may bring about an arrest of the disease. As a rule, however, cases are well established before resort to advice is sought. Under such circumstances our great aim should be to remove infected bone and to provide efficient drainage. How this is accomplished does not seem to me of so much importance as its accomplishment. I am in favour of free

removal of bone, and seeing that the facial nerve at this stage is so frequently paralysed and that there is practically no hope of preserving the ear as an organ of special sense, it appears to me the more widely we operate the better are the chances of arresting the disease—in other words, in order to save life we are justified in ablating the sense organ. I am in the habit now of exposing as much of the dura as possible, of removing the labyrinth, and of rather welcoming a view of the internal carotid artery than otherwise, believing that the greater the amount of temporal bone removed the better the chances of recovery.

As the great majority of the children suffering from aural tuberculosis are in a more or less debilitated condition and possess a low opsonic index, such extensive surgery is only to be accomplished by operating in stages.

Enlarged glands I purposely leave, for a time at least, believing that so long as they are not broken down they act as a first line of defence in preventing dissemination, and hence fulfil a useful purpose. On the other hand, when the infection is a spreading one or when the enlarged glands commence to caseate or suppurate, efforts should be made to assist immunisation. For this purpose tuberculin may be safely administered, beginning with very small doses and gradually working upwards. I have employed Koch's tuberculin *ad lib.* in doses of $\frac{1}{10000}$ to $\frac{1}{20000}$ milligramme at times under the control of the opsonic index, but generally without its aid, watching however, very carefully the amount of reaction, the temperature, etc.

Speaking generally, local treatment, by which I mean irrigation with antiseptics and the employment of antiseptic lotions, is practically valueless, and has never, in my experience, even in early and acute cases, effected a cure. Removal of adenoid vegetations, in such cases themselves frequently tuberculous, and of enlarged tonsils should be effected as a preliminary to any other form of treatment.

Seeing that every individual who has contracted tuberculosis is capable of conveying it to others, the question arises how far it is justifiable to allow such children to mix with others, especially in school, where large numbers are collected together, often in small and not too well ventilated class-rooms.

It seems to me that if the medical inspection of school children is to be of practical service, the inspectors should not merely be handers on of cases to already over-crowded hospital clinics, but should be men who are capable of diagnosing, and them-

selves carrying out the necessary treatment and the scientific investigation of the exciting causes of ear disease. With such an object in view I hold that it is a matter of national importance to have trained aurists attached to all Board of Education schools, whose energies should be devoted to endeavouring to save the hearing power of the youth of the country, who should be provided with an up-to-date laboratory and the means of carrying out investigations upon a scientific basis, and who should be adequately remunerated at the public expense for their services. The number of blighted lives and of lost hopes from loss of, or seriously impaired audition is appalling, the more so when we as otologists know that much of this sad state of affairs is brought about largely from ignorance and from neglect in following up orthodox methods of treatment.

To summarise, my belief is :

(1) That aurial tuberculosis in childhood is of far more frequent occurrence than is usually supposed.

(2) That an early and accurate diagnosis of the underlying factor in the production of suppurative otitis media is essential from a therapeutic, prognostic, and sociological point of view.

(3) That children suffering from tuberculous otitis media should be segregated, and every endeavour made to raise their powers of resistance.

(4) That local authorities should be apprised of the great danger to life from an impure milk supply, and that means should be adopted to secure efficient supervision of dairy farms and creameries.

(5) That notification of tuberculosis in whatever form it occurs should be made compulsory.

These postulates, Mr. President, I feel confidence in recommending to the consideration of this representative gathering of otologists, for after all, is not the health of the rising generation and the preservation of its hearing power one of the most important of our national assets ?

It has been estimated that the loss, direct and indirect, to this country from the prevalence of tuberculosis is in round figures somewhere about eight millions per annum. Surely this fact, to say nothing of the claims of a natural humanity, should stimulate us, and through us the general public, to help in every way possible to stamp out this preventable disease.

Let it not be said of us aurists that "Man's inhumanity to man makes countless thousands mourn."

SOCIETIES' PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Friday, July 29, 1910.

OTOLOGICAL SECTION.

DR. E. LAW, *President, in the Chair.**Abstract Report by* DR. H. KISCH *and* DR. DAN MCKENZIE.*(Continued from p. 478.)*THE VALUE OF OSSICULECTOMY IN CHRONIC MIDDLE-EAR
SUPPURATION.

BY MACLEOD YEARSLEY, F.R.C.S.

This paper was based upon seventy operations in sixty-five patients, five of whom underwent the double operation. Twenty-three were males and forty-two were females, of ages ranging from six to sixty-two years. All were operated upon for chronic or recurrent discharge with a view to the possible prevention of the radical mastoid operation. The duration of discharge varied from three months to many years. The conditions found in the ear were detailed as to site of perforation, state of ossicles, and presence of granulations. The malleus was carious in 62·8 per cent., having disappeared in 6·2 per cent.; the incus diseased in 78·5 per cent., and totally destroyed in 18·1 per cent. The method of operation was described briefly, stress being laid upon the necessity of removing the outer attic wall. The results of the operation were detailed in respect to hearing, tinnitus, and discharge. Hearing was improved in eighteen, unaltered in eight, made worse in three, the result being in doubt in forty. In two cases tinnitus was improved. Discharge, the condition for which the operation was performed, was cured in at least 30 per cent., improved in 42·8 per cent. It recurred in 11·4 per cent., and the operation was a failure in thirteen cases (18·5 per cent.), eleven of which subsequently required the radical mastoid method.

The *conclusions* were stated as follows: (1) That ossiculectomy offered in selected cases at least 30 per cent. of cures and 42·8 per cent. of improvements. (2) That the operation should include careful removal of the outer attic wall, especially in its posterior part. (3) That the annulus tympanicus should be curetted to

prevent the possibility of a false membrane forming. (4) That the operation was a useful alternative measure to the radical mastoid method, especially as it in no way militated against the success of the latter should the simpler procedure fail.

Dr. LAW was indebted to Mr. Macleod Yearsley for bringing the subject before them. He used to think it was a desirable operation, but now he was sure it was not. Twenty-five years ago the mastoid operation was not perfected, but now the danger to life, of facial paralysis, and of continuous discharge was almost *nil*. The author had not told them how he selected his cases.

Mr. HUNTER TOD had taken a considerable interest in ossiculectomy, and had taken it up to avoid the mastoid operation. Many cases of chronic otorrhoea, with fistulae to attack, and recurring polypi, often did well under ossiculectomy. In many of these cases the mastoid was found sclerosed and the antrum very small, and he did not see why, in the proper cases, ossiculectomy should not be as good as the mastoid operation. In a sequence of fifty cases, mostly in hospital, only three had come to the radical operation. One case died, but this had been recommended for the mastoid operation, and had not come. Twenty-three cases were dry. In nineteen there was still slight discharge, but this came from the region of the Eustachian tube, the upper posterior part being dry. In four cases the discharge was unaltered, but the head symptoms were relieved. The hearing results were better than after the mastoid operation, as the mucous membrane and the stapes were left untouched. Twelve cases could hear the voice at eighteen feet, and eleven cases, twelve feet. The hearing, which was often good six months after operation, sometimes tended to diminish later. This was probably due to the formation of adhesions. The operation meant a great saving of time for the working classes.

Mr. F. SPICER associated himself completely with all the President had said, and as completely disagreed with the opener and Mr. Hunter Tod. He had given the operation a fair trial, but his results were awful. He had seen other operators get equally bad results, and looked upon the operation as quite unjustifiable. What harm was there in doing the mastoid operation? It was impossible to get proper drainage after ossiculectomy.

Mr. WEST had had experience of thirty cases, and then had abandoned the operation. He agreed it was necessary to remove the outer attic wall. The advocates of the operation could only show 40 per cent. of cures, in what were, confessedly, selected cases. The advantage of the operation consisted in the short convalescence. The damage to the hearing was identical as with the mastoid operation, and they must remember that the majority of ossiculectomy cases had good hearing before the operation. In cases of attic suppuration the operation was too severe, and it was better to simply open and drain the antrum, without interference with the ossicles. There was nothing like the same percentage of cases of discharge as after the radical mastoid operation. Patients suffered much more pain after these intra-mastoid operations. Special risks, and with these Dr. Bárány had agreed with him, were facial paralysis, which was much greater than with the mastoid operations, and dislocation of the stapes. He had seen a case of the latter condition, which had died from septic meningitis following dislocation and labyrinthitis. After all, the risks of the mastoid operation were small. Troublesome hæmorrhage

might be avoided by a submucous injection of adrenalin, and this method gave an almost bloodless field for operation.

Mr. J. STODDART BARR corroborated Mr. West's remarks about the use of adrenalin.

Mr. MARK HOVELL had found that the large majority of the cases of middle-ear suppuration were associated with cholesteatomata or diseased bone, and did not see how mere removal of the ossicles could effect a cure.

Dr. WESTMACOTT strongly objected to the operation.

Mr. MARRIAGE was against the operation. In his experience, when there was much disease in the attic and middle ear, there was much in the antrum. What length of time had the cases been treated before operation? How often could Mr. Macleod Yearsley divide the tendon of the stapedius?

Mr. MACLEOD YEARSLEY, in reply, was surprised that only one member supported him. The majority of his cases had had discharge for from two to twenty-three years, and some had been curetted. All had been carefully treated beforehand. It was necessary to remove the outer attic wall. The question of hearing depended on the integrity of the conductive apparatus at the time. His early cases had suffered a good deal of pain, but with better technique he had diminished this. If he only considered his recent cases instead of the whole series, which extended over fifteen years, he might have been able to show better results. He had never had a case of facial paralysis or of dislocation of the stapes. He usually divided the tendon of the stapedius some days after the operation: he used a small, sharp tenotome, and the operation was quite painless. He had found this little operation useful in improving the hearing in some cases after suppuration had ceased.

DEAFNESS AND DISEASES OF THE EAR IN RELATION TO THE PUBLIC SERVICES AND INSURANCE, AND THEIR BEARING ON FORENSIC CASES AND THE CHOICE OF A MEANS OF EARNING A LIVELIHOOD.

BY DR. JOBSON HORNE.¹

Dr. Horne referred to the difficulty of arriving at useful conclusions by reason of the absence of reliable statistics upon which sound opinion could be based. He asked what, for example, was the average duration of life of sufferers from otosclerosis; and should a perforated drum induce us to advise an insurance company to load a premium? In respect to cases of middle-ear suppuration, he asked, apart from the presence of threatening symptoms, whether they should be accepted or rejected.

The question of deafness in the examination of candidates for the Civil Service was also discussed, and the bearing of deafness and ear disease on forensic cases.

With regard to the influence of deafness upon earning a livelihood, he incidentally remarked that for certain occupations deafness was an advantage.

¹ We hope to publish Dr. Horne's article in full at a later date.

Dr. LAW heartily congratulated Dr. Jobson Horne in putting so much valuable information in such a short paper.

Dr. GRAY said that Mr. Lake had stated that the presence of a dry perforation should cause the life to be weighted or refused. He thought each case should be considered individually, as insurance companies could not profitably refuse all such cases. Otosclerosis was an uncommon condition, and they must remember that deaf people made more use of their eyes and other senses in avoiding accidents than others.

Mr. MACLEOD YEARSLEY considered that in cases of otosclerosis the general condition of health was important, seeing that these persons were liable to other intoxications. He thought too much was made of deafness in accident insurance, as the deaf were more careful to avoid accident than other people. In old suppuration the length of time since the last attack of suppuration must be considered, and he passed as a good life one in which there had been no suppuration for seven years or more.

Dr. LAW wished to refer to the presence of exostoses, hyperostoses, and other contractions of the meatus. There was a risk of retained secretions causing trouble, and this was specially so in those who were out of reach of surgical aid. Were deafness and vertigo, *per se*, reasons for increase or refusal?

Dr. JOBSON HORNE, in reply, said he had not specified exostoses, but referred to them under the general terms of contracture of the meatus. The cases ought to be rejected until the condition was remedied surgically. It was useful to have some standard for the length of suppuration. Severe cases of vertigo ought to be weighted.

SOME REMARKS ON THE CONNECTION BETWEEN AFFECTIONS OF THE MUCOUS MEMBRANES THROUGHOUT THE BODY AND MIDDLE-EAR DISEASE.¹

BY MR. MARK HOVELL.

Dr. LAW was glad Mr. Mark Hovell had drawn attention to this subject. He associated himself with the remarks about the gynaecologist.

Dr. BRYAN was much interested in the paper. He agreed with the author as to the relation of distant conditions on the throat and nasopharynx. It was seen not only in women, but also in men. He referred to the danger of leaving remains of adenoid tissue in the fossa of Rosenmüller. Special instruments had been designed for the removal of these, and the use of forceps was not unattended with danger.

Mr. F. SPICER thought the paper out of the common and very useful. It was common to see an association of trouble in various mucous membranes. The operation for adenoids was much abused, and the removal of the posterior extremities of the inferior turbinates very important.

Dr. JOBSON HORNE concurred with the removal of the posterior ends of the inferior turbinates, but was there not a limitation as to the age? In quite young children these became much engorged on the table, but readily subsided afterwards. In young adults the removal of these was of more importance than of the adenoids. He preferred the guillotine to the snare for the operation.

Dr. GOLDSTEIN had not heard much said about the adenoid problem. He thought damage was often done in remedying neglected cases. The

¹ We hope to publish this paper in a later issue.

relation of the remoter organs to the pharyngeal mucous membrane was very interesting, but he did not think that actual granulations in the pharynx were to be cured by treatment of the vaginal or genital tract.

Mr. MARK HOVELL said that a naso-pharyngeal catarrh was more or less a part of a general catarrh and should be so treated. He never removed bone from the posterior extremities of the inferior turbinals. He had often found these large in very young children, and removed them irrespective of age.

EXPERIMENTS BEARING ON THE PRACTICABILITY OF TREATING MENINGITIS (SEPTIC AND SPECIFIC) BY MEANS OF LAVAGE OF THE CEREBRO-SPINAL SUBARACHNOID SPACES; PRELIMINARY COMMUNICATION.

BY DR. J. STODDART BARR.

Dr. Barr described experiments which showed the practicability of lavage of the subarachnoid spaces.

The experiments were performed in the summer of 1909, and conducted in the following way: The body of a child was placed on its right side upon a table, and the head was supported by means of a wooden block. Lumbar puncture was performed and the hollow needle left *in situ*. A small quantity of turbid fluid escaped, but soon ceased to flow. Through a trephine opening in the skull, made above and behind the left ear, a cannula-trocar was introduced into the lateral ventricle. By means of a rubber tube attachment and a glass funnel held two inches above the head water treated with carbol-fuchsin was allowed to flow into the ventricle. In less than a minute the fluid escaping from the lumbar puncture was found to be tinted red; it continued to flow as long as the fluid entered the lateral ventricle. On examining the brain afterwards the course of the fluid could be easily traced into the fourth ventricle *via* the foramen of Monro, third ventricle, and iter. From the fourth ventricle the fluid found exit into the subarachnoid space, through the foramen of Magendie, and possibly also through the two lateral apertures. It stained the entire cerebello-medullary cistern, passed forward into the inter-peduncular cistern, upwards along the Sylvian fissures over the anterior ends of the temporo-sphenoidal lobes, and even along the vaginal sheaths of the optic nerves.

Whilst arranging for experiments on monkeys, a suitable case came under Dr. Barr's care.

The patient was a boy, aged fifteen, with advanced purulent lepto-meningitis, secondary to chronic purulent ear affection (left). The symptoms were typical of the worst form of the disease, and

lumbar puncture verified the diagnosis, the fluid withdrawn being turbid and containing streptococci and pus cells.

The radical mastoid operation, administration of urotropine, repeated lumbar punctures, and injections of anti-streptococcic serum led to no improvement in the condition, and the boy became moribund.

Under chloroform anaesthesia lumbar puncture was performed. A $\frac{1}{2}$ -in. trephine opening was made in the cranium above and behind the left ear, and a wide cannula trocar was passed into the left lateral ventricle. There was immediately a gush of semi-turbid fluid in large amount, and under great pressure. The pulse at once steadied from 130 to 100 per minute, and the respirations became regular and ceased to exhibit the Cheyne-Stokes type as before. After the flow had ceased a rubber tube was passed through the cannula into the ventricle and the cannula removed. Sterilised saline solution, at 100° F., was allowed to flow into the lateral ventricle, the glass funnel being held at first two inches above the level of the head. In a few seconds turbid fluid began to drop from the lumbar cannula. The funnel was raised up to a foot above the head, when a constant stream of tinted fluid, mixed with flakes of exudate, escaped from the cannula. Lavage was continued for an hour, and finally 10 c.c. of anti-streptococcic serum was introduced into the lateral ventricle.

The patient bore the operation well. It was noted that the respirations increased in rapidity when the funnel was raised over a foot above the head.

Death ensued fourteen hours afterwards, and the diagnosis was confirmed by *post-mortem* examination.

The experiments had at least proved that lavage of the sub-arachnoid spaces could be carried out on a living person with apparently no unusual danger to life.

He would like to hear opinions as to whether it would be justifiable to employ this method at an earlier stage of the disease, repeating the lavage daily, and also to suggestions as to a suitable fluid, such as a mild antiseptic or digestive fluid, calculated to soften the exudate and deal with the toxins.

Dr. LAW was much indebted to the author for bringing these interesting experiments before them. The paper did not lend itself to criticism, and the method of treatment was novel.

BRITISH MEDICAL ASSOCIATION.

Thursday, July 28, 1910.

SECTION OF LARYNGOLOGY.

MR. H. TILLEY, *President, in the Chair.*

Abstract Report by Drs. DAN MCKENZIE and HAROLD KISCH.

(Continued from p. 486.)

DISCUSSION ON VASO-MOTOR RHINITIS.

Dr. BIRKETT (Montreal), in introducing the subject, said there were various predisposing factors towards the condition—neuropathic disposition, hereditary and acquired, changes of weather, and time of life. Civilisation encouraged development by an abnormal excitement of the nervous system.

It was commoner in women than men, and often occurred in several members of the same family.

Other predisposing causes were strain and exhaustion, mental or physical, rheumatism, and gout.

The exciting causes were either internal or external, such as pollen, dust, or the active rays of the sun; these were supposed to act on a pathological nasal mucons membrane.

Ballenger, basing his views on clinical experience, thought that catarrhal sinusitis was an aetiological or exciting cause.

Others considered chemical changes in the mucons glands or auto-toxaemia due to dietetic errors should be held responsible.

Chapelle had had four cases due to malaria. Three factors were always to be found: (1) A neurotic temperament; (2) a local morbid condition of the nasal mucons membrane; (3) an exciting cause, internal or external.

The pathology of the condition was uncertain and various views were held:

(1) A sudden turgescence of the anterior extremities of the inferior turbinals, and later, hypertrophy and hyperæsthetic areas elsewhere.

(2) The presence of thickened nerve-fibres in the free ends of the inferior turbinals. This had not been confirmed.

(3) The sensory nerves to the mucons membrane contained a large number of very fine fibres, and this was specially seen in the branches of the trigeminal to the nose.

(4) Sympathetic fibres, which were non-sensitive when not excited, became hyperæsthetic when exposed to a stimulus.

But the real pathological changes in the fibres and cells were still unknown.

The prognosis was usually considered favourable, but not certain even with operation. Permanent changes might develop in the nerves.

Symptoms.—The patients were of three classes:

(1) Females of slight physique and of nervous temperament. In these there were frequent attacks of sneezing, with profuse discharge. These were not associated with nasal obstruction or eye symptoms. Exhaustion and headache were marked, and the symptoms were worse at the menstrual periods.

(2) Florid males who were good livers. In these the general symptoms were the same as in the first class, but there were nasal obstruction and lachrimation. The mucous membrane of the inferior turbinals was swollen and hyperæmic.

(3) This class differed from the above only in that the mucous membrane was swollen and pale and stippled.

In vasomotor rhinitis the flow was from both nostrils and was not influenced by the position of the head. It was not regular and seldom continuous.

It must be diagnosed from the escape of cerebro-spinal fluid.

Treatment.—Constitutional for neurasthenia, and each case must be studied. The diet must be regulated and the habits of life attended to. The character, amount, and hours of work must be considered; in some, work and physical exercise must be prescribed.

Local Treatment.—Various experts had recommended the following:

- (1) Galvano-cautery puncture to hyperæsthetic areas.
- (2) The application of trichloroacetic acid.
- (3) Free scarification.
- (4) Resection of the nasal nerve.
- (5) Cold-water sprays to the back of the neck.
- (6) Nasal spray of biniodide of mercury; this was very painful.
- (7) The continuous current with the positive pole in the nose, and a current of from three to five milliamperè-meters. This was not of much value.
- (8) The injection of alcohol into the nasal branches of the trigeminus. The anterior group were first attacked and then the posterior branches. A special syringe was required, and five drops

of alcohol were used. His personal results in six cases were successful.

(9) Increasing doses of arsenic.

Mr. WAGGETT said Dr. Birkett's admirable paper had brought the subject up to date. He himself wished to make a suggestion concerning the line of further advance. Only the really rebellious cases came into contact with the medical profession. We had no means of finding out the minimum of interference in the typical case that was to become established as part of our routine treatment. It was quite possible that certain extensive forms of interference might prove invariably successful, and he eagerly awaited Dr. Yonge's report on the ultimate results of his nasal nerve-resections. In his experience they had always been an element of uncertainty with the many remedies he had tried. It was their business to dispel that uncertainty. There was an essential underlying element common to all cases of paroxysmal coryza, whether seasonal or diurnal.

It was evident that in the subjects of paroxysmal rhinorrhœa of the non-seasonal type the nasal phenomena were not the outcome of any external irritation.

It had been suggested that the nasal nerves in rhinorrhœa and hay-fever patients were excessively sensitive. In many highly sensitive noses the gentlest probing produced the sneezing reflex, but this reflex was not paroxysmal, and there was no œdema. Moreover, although in the subjects of spasmodic coryza the nasal nerve-endings were found to be more than usually sensitive, still, paroxysmal sneezing and rhinorrhœa never directly followed the application of the probe. The symptoms commenced some hours afterwards, and evidently were not followed at the time of, and wholly on account of, the mechanical irritation of the mucous membrane.

The immediate after-results of cauterisation and so forth were often enough very satisfactory, and in his experience one of the regular after-results of extensive operations in the nose in such cases was complete immunity from attacks for a period of three or four weeks. Dust did not produce the rhinorrhœic spasm during the period of exposure. He was sceptical about bright light being capable of producing a paroxysm of hay-fever. In all persons a reactionary hyperæmia and temporary blocking of the nose was produced by the application of adrenalin, and in certain individuals, he believed in all paroxysmal sneezers and many persons of plethoric or gouty habit, this secondary reaction was accompanied

by œdema, rhinorrhœa, and prolonged paroxysmal sneezing. The essential difference lay in the formation of œdema—in other words, of the abnormal passage of fluid from the blood-vessels into the tissues. One was compelled to assume that in paroxysmal sneezers the prolonged titillation of the nerve-endings, or more probably of the nerve-fibres, was dependent upon that œdema. Was the stimulus the result of a mechanical stretching of the nerve-structures or of chemical action upon them, or or both combined? Experiments to settle this question must be undertaken by a man fully alive to all the phenomena connected with the central and peripheral nervous system, as well as to the reaction of foreign fluids upon all the tissues concerned, and upon the normal fluids bathing them. He would have to investigate, both upon normal and paroxysmal human subjects, the effects of the submucous injection of neutral isotonic fluid, normal serum, the serum of hay-fever and paroxysmal sneezers both in and out of their period, and also the nasal secretions of these subjects taken at the various phases.

Was it worth while to set such a research on foot? It must be admitted that the unpleasant phenomena might be excluded in a good many cases for weeks or months by local treatment.

The underlying problem, however, remained unsolved. Why did certain people react to poisons, which to others were innocuous, by developing nasal œdema with its distressing consequences? These persons differed in some unknown but remarkable manner from their fellows, and it was their business to detect the underlying basis of their peculiarity, and, if possible, to redress it. He predicted that it would ultimately be proved that the susceptibility to paroxysmal sneezing had a chemical basis in which the body-fluids in general were concerned. The disease at bottom was in no real sense a nasal or a nervous one. Dunbar had shown that if pollen-toxin were injected into the arm of a hay-fever patient all the symptoms of that malady were produced, together with large urticarial wheals over the whole skin. He (Dunbar) had proved that the blood-corpuscles of such patients were laked by pollen-toxin, whereas those of normal subjects were not. The blood constituents must therefore be included in the problem.

Again, with regard to ordinary diurnal paroxysmal coryza, the attacks generally bore a distinct relationship in time to periods of sleep. It was known that the body-fluids of the sleeping and waking differed, and the early morning urine was stated to contain convulsive substances, while that of evening contained narcotic.

The association of urticaria with spasmodic rhinorrhœa was

well known. It had been shown by Wright that urticaria was associated with a deficiency of lime-salts in the blood, and that the supply of an excess of calcium in the ingesta would in many cases prevent the skin eruption. It was certain, therefore, that in urticaria an essential element was a condition of abnormal chemistry, resulting in the abnormal transference of fluid through the walls of the capillaries. Paroxysmal nasal phenomena not only bore a striking resemblance to urticaria, but were in many cases associated with it. Was it not probable that paroxysmal œdema was a true urticaria, and might it not be investigated upon the lines that had proved valuable in the skin malady?

For some three or four years since hearing of Wright's work on urticaria he had treated a large number of paroxysmal sneezers with calcium lactate administered internally, and in the majority of cases with success, and almost always with modification of the symptoms. All the cases had not been successful, but it was known that calcium was absorbed with difficulty by some individuals. Some cases had reacted favourably only to repeated large doses, others only when magnesium, as well as calcium, was administered. These salts influenced the coagulability of the blood, but the coagulability rate did not represent the whole story in skin and nasal urticaria, for hæmophilias, with a deficient calcium index, were not specially prone to these disorders.

It was pretty clear that it was not yet proved that the mere ingestion of moderate doses of calcium was in itself sufficient to control all cases of nasal urticaria under all conditions, and we still had a gap in our knowledge which must be bridged. What he had said concerning calcium suggested the probability that a research into the blood chemistry of the subjects of spasmodic rhinorrhœa would result in the discovery that the vulnerability of certain persons to mild intoxications by substances which were to the normal man innocuous was associated with—dare he say, dependent on—the relative poverty of the blood in some simple mineral constituents. The investigation might prove that it was not a question of deficiency, but of excess, and that the substances involved were neither mineral nor simple, and certainly the investigation must be followed by a further one, first into the means of rectifying the abnormal chemistry, and secondly, into the manner of detecting and, perhaps, correcting the cause of it.

Spasmodic rhinorrhœa was a disease extremely well suited for experimental investigation. It was, he contended, within their power to furnish repayment for the generous welcome accorded to

rhinology by the older branches of the profession, through the medium of a hay-fever investigation. The first step was to convert the man susceptible to pollen into a normal person; it was only a step further to detect beforehand susceptibility to more serious diseases, and one step more to correct the susceptibility before danger threatened.

The purpose of his paper was to suggest that it was within the power of the President to set the first step in motion, and upon a very promising path, by encouraging them that morning to place their knowledge, their clinical material, and some money at the disposal of a biological laboratory.

They would have justified their choice of that subject for discussion if at that meeting they instituted a competent research into the basis of paroxysmal rhinorrhœa and did not rest content merely with the multiplication of palliative measures.

THE PROBABLE EXPLANATION OF THE EFFECT OF NASAL CAUTERISATION IN ASTHMA AND OTHER VASOMOTOR NEUROSES.

BY DR. ALEXANDER FRANCIS.

Dr. Francis drew attention to the general adoption of nasal cauterisation in the treatment of asthma since the reading of his original paper before the Clinical Society in 1902. In that paper he gave notes of 402 cases treated in Australia, showing a more or less satisfactory result in 86·3 per cent., and complete cure in 194 cases. He now had notes of 1066 treated in this country, and could claim that the results were quite as good as far as the general average of improvement, although a somewhat smaller proportion had obtained absolutely complete relief. The great difficulty had been to find a reasonable explanation of the effect so constantly observed. Many of the results were so sensational, and the effect on the asthmatic condition was so out of proportion to the apparently trivial operation performed, that one could not help feeling that much must be due to suggestion. He instanced a case of a man who had been unable to work for ten years, during the whole of which time he had spent the nights sitting in a chair with his arms and head resting on the table, and who experienced instant relief on the nasal septum being cauterised. There was, however, strong evidence against suggestion playing any part in the treatment in most cases. Thus:

(a) Many of the best results were obtained in the most incredulous patients.

(b) Good results were obtained in children, who were too young to know the object of the treatment.

(c) In some cases good results were obtained after prolonged treatment, when the patients had given up all hope.

(d) Frequently relief was obtained by the lightest touch, although the patient had been previously severely cauterised without any benefit.

(e) Some operators who were unsuccessful at first became proficient when they had mastered the details of the technique. He had soon realised the fact that the prognosis was better the more normal the nose appeared, the more free it was of hyper-sensitive spots, and particularly when there was no sign of polypus or polypoidal degeneration. Consequently he excluded the irritative theory of relief.

That the relief was not due to cauterisation was shown by the fact that the lighter the cauterisation the better the result. He used to think that asthma was due to spasm of the bronchial muscles, but now considered that Dr. Francis Hare had so incontrovertibly proved that asthma and the other paroxysmal neuroses were vaso-motor neuroses that they were compelled to find other explanation. Some years ago Hare suggested that his (Dr. Francis's) method of treatment ought to be of use in the other vaso-motor neuroses. Consequently he and Dr. W. N. Robertson, of Brisbane, had employed it in a number of cases of angina with surprising results.

He described in detail such a case, with its successful treatment by nasal cauterisation. Cases of migraine, in which there was no sign of turbinate pressure on the septum, he also treated successfully in the same way.

He had also had a good result in Raynaud's disease.

Incidentally, whilst treating an asthma case, suffering also from mucous colitis, he had seen this latter disease cured.

He had found it possible to lower or raise a patient's blood-pressure by cauterising different spots in the nose. In cases of abnormal high pressure it was easy to get an initial fall of 20 mm. of mercury, and although the pressure tended to rise again, it did not usually reach the original level, and by persevering a permanent reduction of from 20 to 40 mm. could usually be obtained. On the other hand, he found it was possible to raise the blood-pressure, but this was a less certain result than the reduction. He believed

this reduction of an abnormally high blood-pressure was largely responsible for the extraordinary feeling of well-being so often experienced after septal cauterisation.

It is impossible to say at present how this effect on the blood-pressure was produced, but there was evidence that it was due to vaso-motor action through the sympathetics on the cutaneous vessels. Dr. Pierre Bonnier had suggested that the nasal mucous membrane was to be looked upon as a telephonic exchange board, and we had to learn where to insert the pin in order to get connection with the various centres. Thus he (Dr. Bonnier) stated that the more the centre aimed at occurred low in the bulb the more anterior in the nose was the spot to be touched, and so on. Dr. Francis thought all this could be explained by the action of nasal cauterisation on the vaso-motor centre, for after all vaso-motor disturbances were at the bottom of most ailments.

One could not cauterise too lightly. The merest touch, which caused no local irritation or reaction, was the one which produced the best result.

He felt he ought to sound a note of warning against indiscriminate nasal cauterisation, seeing what profound and diverse effects upon the vaso-motor system a touch with the cautery could produce.

Dr. SCANES SPICER thought the chemistry of the blood was important, and also the chemical integration of the body. With regard to the use of adrenalin, he suggested that its beneficial action might be due to some deficiency in the adrenal function in these cases. The psycho-motor element must be treated. He considered there was nothing new in Dr. Francis's paper, as similar results had been obtained twenty-five years ago. He had not verified the effect of the cautery on the blood-pressure.

Mr. N. C. HARING agreed that the term "spasmodic rhinitis" was unfortunate, as no one thought of it as a rhinitis, but as a spasmodic neurosis. Some physical weakness in the nose might cause the neuro-pathic weakness to appear as a spasmodic rhinorrhœa. If this condition were cured, a similar nervous condition often occurred in other parts of the body. He considered the central nervous factor of more importance than the peripheral irritation. The attacks occurring at definite times of the day showed that dust and the like were not of great importance in causing the attacks, but that they depended on some instability of the central nervous system. In the Manchester district there was often found a distinct family history. There were two clinical divisions: (1) those with lesions in the nose; (2) those without obvious lesions in the nose. The question was what to do with the latter. He did not think it was more reasonable to use the cautery than another form of peripheral stimulus. He had had a successful result by passing a Brünning's œsophagoscope in one case. He thought the good results were often due to suggestion.

Dr. STCLAIR THOMSON suggested "paroxysmal rhinorrhœa" as the best title to adopt. He agreed with Mr. Waggett that future investigation should be devoted to blood-chemistry, internal secretions, etc. Like others he had seen spasmodic rhinorrhœa as one of a series of neuroses which an individual might suffer.

Dr. WATSON WILLIAMS thought the lesions were due to a toxic condition, or a chemical change. Sometimes the peripheral conditions were important. He did not consider the successful results were due to suggestion. He had been struck some years ago with the results of the galvano-cautery, but had found its use resulted usually in temporary improvement only. This occurred in nearly all cases, and also with other methods of local treatment. The results were due to the effect of traumatism on the nerve-centres. The only safe line to take was to treat the general condition of the patients.

Dr. HENRY LUC said that cases could be divided mainly into two classes: (1) those with no nasal lesions; (2) those with obvious nasal lesions. Yet there was an intermediate group of cases, which showed on examination, after the thorough use of cocaine and adrenalin to the nasal cavity, some lesions of the middle turbinal or of the middle meatus. It might be a slight myxomatous degeneration of the mucous membrane of the middle turbinate body, or the presence of small polypi beneath it. Removal of the middle turbinate body and polypi gave excellent results. French surgeons objected to the indiscriminate use of the cautery, and did not use it in the absence of local conditions.

Dr. PEGLER thought that most people examined the middle meatus. Certain conditions of the inferior turbinal were also sometimes found. They were swelling, due to vaso-motor tumefaction or chronic inflammation. Some cases only showed slight lesions, and it was difficult to draw the line in classifying. Not much stress had been laid on local treatment other than the cautery. The application of acids, such as glacial acetic acid, was sometimes very successful. He considered there was a close relation between asthma and urticaria; in fact, he looked upon the former as an urticaria of the mucous membrane.

Dr. ANDREW WYLIE said they had not yet arrived at the source of the trouble. He had had several cases in which the treatment of the astigmatism, which was present, by oculists had resulted in cures. The condition often occurred in young men about eighteen years old. They should never be treated by the galvano-cautery, as the condition was really a sexual event, and the cautery only resulted in a permanent injury to the mucous membrane. The occupation of the individual was of importance. Clerks, who kept their heads bent down, and milk workers were often sufferers. Change of employment was all that was necessary.

Dr. PERMEWAN's views were no clearer than before the papers or discussion. He did not agree with Dr. Wylie that the cautery did harm. Chemical caustics were less irritating and good results often accrued. He felt that the time had now arrived for Dr. Francis to give a detailed description of his method of treatment. He suggested that the removal of the hard, resisting part of the septum between the two middle turbinates might be useful. He had had one very successful case with this treatment.

Dr. IRWIN MOORE agreed as to the magical effects of adrenalin. He would like to draw attention to the use of the nitrites. He had for many years treated asthma by spraying a solution of the sodium salt into the bronchial tubes, and had never had a failure.

Mr. PARKER had never had such good results until he had adopted Mr. Francis's method of treatment. He practised the lightest possible canterisation of the tubercle of the septum and obtained excellent results. He was unable to explain, but the facts were clear, and considered it was their duty to employ any method which gave relief to their patients, even though it was of an empirical nature.

Mr. TILLEY said that the subject had been very thoroughly ventilated. He accepted all responsibility as to the title used for the discussion, and justified it as being the term most commonly used. He quite agreed it was not the most suitable term. The use of adrenalin was not always free from danger, and he quoted a case in which intense cyanosis occurred on its use to illustrate this point. He did not agree with Dr. Scanes Spicer that the effect of canterising was common knowledge twenty-five years ago, and Dr. Francis deserved credit for bringing the matter prominently forward. He had found the use of both calcium and magnesium salts sometimes of the greatest service.

Dr. BIRKETT thanked them for the kind reception of his paper. He would like to co-operate in any movement which was started on this side of the Atlantic for the investigation of the causes of this disease.

Mr. WAGGETT agreed that the calcium and magnesium salts were not specifics, and suggested that in the chemistry of the blood we should find the explanation of their action.

Dr. FRANCIS had seen three cases of serious results after the use of adrenalin, and considered its use a considerable risk. A reflex effect on the respiratory centre accounted for the success of various methods of peripheral stimulation. It was difficult to exactly describe the technique, but he would be pleased to demonstrate it on a case. The main point was to do as little as possible, and to use an almost cold cauter.

THE TREATMENT OF LARYNGEAL TUBERCULOSIS BY TUBERCULIN.

By Dr. CAMAC WILKINSON.

The opener said that laryngeal tuberculosis offered the best opportunities for studying the value of tuberculin in the treatment of tuberculosis. He had not had recourse to sanatorium methods, and had witnessed healing of ulceration of the larynx, when the disease in the lungs was in the third stage, without any local treatment.

At times the disease in the larynx appeared to be much ahead of that in the lungs. He had seen four such cases, and related their histories and successful treatment with tuberculin. In 150 cases of pulmonary tuberculosis, in the first stage, he had seen but few cases in which the lesion could be definitely described as tuberculous. There was a pre-tuberculous laryngitis of a simple kind. After treatment with tuberculin he had never seen tuberculous laryngitis develop in these early cases.

In the second and third stage of the lung disease, when tubercle bacilli were being constantly discharged by the air-passages,

typical lesions became more and more frequent. Statistics showed that the larynx was affected in nearly 50 per cent. of the late stages of pulmonary tuberculosis. Sanatoria statistics must be ignored, because laryngeal tuberculosis disqualified for sanatoria.

In ninety cases of pulmonary tuberculosis in the second stage he had had fifteen with definite laryngeal tuberculosis. These had given good results. Gratifying as these had been they were not to be compared with the extraordinary results, seen in pulmonary tuberculosis later than the second stage, by using large doses of tuberculin, with no sanatorium methods, without any local treatment, and with a total disregard of the opsonic index and the curious negative phase.

Many illustrative cases were recited. For many years he had given up all other methods of treating laryngeal tuberculosis except by means of tuberculin, and used no local measures except palliatives for pain, and his results had been in some cases extraordinary. In two cases in the second stage there was a relapse after six years' complete freedom from symptoms. In most of the cases in which tuberculous laryngitis existed, whether in second, second to third, or third stage, great improvement followed, and for several years there had been no return.

The series of case in which he had carefully watched for many years the immediate and after-effects of tuberculin treatment, according to clinical and not laboratory methods, left no doubt in his mind that in tuberculin they had a remedy not only better than all other known methods combined, but far the best that was likely to be suggested for use at that or any future time in all cases of laryngeal tuberculosis.

Dr. WATSON WILLIAMS welcomed any method which gave good results. Small doses of tuberculin ought only to be used. He regretted the remarks on sanatoria, which he did not think were correct, and had seen excellent results with sanatorium treatment alone.

Dr. DONELAN would like to hear more details as to dosage. He had avoided the use of tuberculin. The best treatment for ulceration was the galvano-cautery.

Mr. WAGGETT felt that the use of tuberculin was only of value in chronic cases. In such cases one could turn the balance in favour of the patient. In progressing cases he did not see favourable results.

Dr. BIRKETT said that in Canada the use of tuberculin was universal. It was said that its use resulted in cedema of the larynx, but he had never seen such a result. Very small doses, from $\frac{1}{2}$ –1 mgrm., should be used, and slight reactions only obtained. He never exceeded 4–5 mgrm. He considered the method useful for both diagnosis and treatment.

Mr. TILLEY agreed that tuberculin was of most use in cases of a chronic nature. It was not going to cure all cases, and the suppurative

and pyogenic conditions so often present must be treated, as these gave the tubercle bacilli a field for their activity.

Dr. WILKINSON, in reply, said that the prognosis depended on the condition of the lungs. It was impossible to give details of the method here, but they were fully discussed and statistics given in his book. He had had no success with laryngeal tuberculosis until he commenced the use of tuberculin.

Friday, July 29, 1910.

MR. H. TILLEY, *President, in the Chair.*

THE following papers were read:

THE ANATOMY OF THE CAPSULE OF THE TONSIL AND ITS SIGNIFICANCE
IN THE TREATMENT OF DISEASES OF THE TONSIL.¹

BY MR. SECCOMBE HETT.

Describing the anatomy of the tonsillar capsule, Mr. Hett observed that the upper portion is surrounded by a loose areolar tissue space, the peritonsillar space, which is limited below by the insertion of muscular fibres from the superior pharyngeal constrictor into the capsule. In the act of swallowing the upper part of the tonsil is pressed downward and inwards between the pillars in such a way as to encourage the discharge of secretions from the supra-tonsillar fossa.

In peritonsillar abscess the abscess cavity corresponds to the peritonsillar space, and as this space is limited below by the muscular attachment mentioned above, the pus is prevented from tracking downwards, and the abscess points in the palate. A succession of quinsies leads to the obliteration of this space by cicatricial tissue, and in dissecting out such a tonsil an artificial division has to be made.

Turning to operation, he advocated complete removal of the tonsil in its capsule when it is deeply embedded between the pillars, and when it is, or has been, the seat of septic disease.

He pointed out that incomplete removal was liable to be followed by recurrence, because he had found that it is in the deepest layers of the tonsil close to the capsule that active cell-growth takes place.

In gross tuberculosis of the gland the capsule confines the

¹ We hope to publish Mr. Hett's paper in full in our November issue.

disease to the tonsil proper, and the same tendency is observed in sarcoma. For this reason, removal of the tonsil for sarcoma may, in its early stages, be properly performed through the mouth.

ENUCLEATION OF THE TONSIL.

BY DR. DAN MCKENZIE.

Enucleation is called for when the tonsil is the seat of frequent inflammations or the cause of quinsies; when recurrence follows the ordinary operation of tonsillotomy; when there is tuberculous enlargement of the cervical lymphatic glands; and when the tonsils are "flat" or "buried." Simple tonsillotomy is, however, sufficient in most cases for the relief of respiratory obstruction, especially if the operator has had no special experience in the surgery of the throat.

The operation of enucleating the tonsils by dissecting them out of their bed was described, and the difficulties and dangers of the operation detailed.

Dr. STCLAIRE THOMSON said that the operation described by Dr. Dan McKenzie was no new departure. It was as old as Celsus, and he himself had published a method of enucleating the tonsil many years ago. In this operation he used the guillotine, pulling the tonsil out of its bed by means of forceps and removing it entirely in this way. Sometimes only one application of the guillotine was sufficient to enucleate the gland, as the forceps caused the tonsil to become invaginated into the pharynx. As long as the tonsil was completely removed it did not matter whether the knife or the guillotine was used. The objection to dissection was that a profound anaesthesia was necessary. There was scope, however, for both operations. Dissection was necessary for tonsils which could not be guillotined. A certain amount of skill was undoubtedly necessary. Mr. Hett's statistics were vitiated by the fact that they referred to hospital cases in whom the operation was performed by imperfectly experienced house-surgeons.

Dr. BRYAN said that it was absolutely necessary always to remove the whole gland, otherwise subsequent trouble was the rule. Among other dangers he cited tuberculosis and arthritis deformans, the latter of which had been shown to be caused by slow sepsis of the tonsils. After having tried all methods of operating he had come to prefer the cold snare.

Mr. E. WAGGETT disagreed with Dr. McKenzie in regard to the difficulties of enucleation. No operation was so easy to perform so long as dissection was not employed. He also disagreed with the statement that guillotining was the routine method. The cold wire snare was the routine instrument. He had used it for ten years. The tonsil was seized with forceps, and pulled out, the extra-tonsillar space was opened by puncturing it and the snare applied. There was less bleeding than after tonsillotomy. There was no danger in a general anaesthetic if administered by a competent anaesthetist.

The PRESIDENT suggested that the speakers should consider whether

or not pain and sloughing were greater after snaring than after dissection, and whether adhesions proved troublesome at a later date. Was more lymphoid tissue left after one operation or another to produce pseudo-quinsies, and was there any change in the voice after operation? The duration of convalescence should also receive consideration, as should hæmorrhage and the best methods of checking it.

Dr. WM. HILL said that he took up an eclectic position with regard to tonsil operations. In private work he questioned whether the surgeon's duty was properly done if he relied entirely upon the guillotine. He thought Mr. Hett's work was most admirable. In operating on the tonsil it was important to get at the roof of its bed in the pharynx. He agreed with Dr. McNeil Hardy as to the meaning of the supra-tonsillar fossa, or, as it was better called, the palatal recess. This was the centre of the field in tonsil operation, and care should be taken to remove it entirely.

Dr. DUNDAS GRANT said that although it could not be denied that very excellent results constantly followed the removal of tonsils by means of the guillotine, he had had searchings of heart with regard to the use of its routine practice, and he had himself exercised a certain amount of eclecticism in the choice of operation. He considered that the leaving of a portion of tonsil tissue, as such, was not a serious matter and, indeed, possibly a beneficial one so long as the crypts were cleared away. Moreover, the protective character of the capsule had already been pointed out, and its complete removal was open to question. He advised complete enucleation when there were recurring attacks of tonsillitis or quinsy, or infection of the cervical glands, or unexplainable feverish or rheumatic attacks. When he wished to enucleate he used a blunt-pointed cutting hook for detaching the upper pole of the tonsil and the pillars of the fauces, especially the triangular plica. He agreed with Dr. Thomson as to the methodical turning of the guillotine so as to include the lower pole of pendulous tonsil, as described with great minuteness in a former issue of the *Clinical Journal* by Mr. Mark Hovell. Dr. Grant used Ruault's *morcellement* instrument for the removal of tonsils in young adults, as it was in them that post-operative or secondary hæmorrhage was apt to occur when the guillotine was used. Very large and somewhat pedunculated tonsils could be removed, and, indeed, most beautifully enucleated by means of the *écraseur*.

Dr. LUC said that the wire snare was a troublesome instrument to use, and recommended in its stead the so-called "rigid cold snare" of Vachez, which consisted of two blunt rings with an action similar to the French tonsil guillotine. Care should be taken in using forceps to seize the tonsil vertically. As anæsthetic he employed 1 per cent. of novocain injected into the pillars, into the upper part of the tonsil, and into its lower part near the tongue.

Dr. DONEGAN had tried all methods. Very few cases operated on by the guillotine did well. Recurrences were often seen and necessitated enucleation. For this he used Löwenberg's adenoid forceps, which he had found to be satisfactory.

Dr. SPOHN advised the removal of the tonsil *in toto*. Could any injury result from its entire removal? Decapitated tonsils always recurred, but good work could be done with the guillotine if the tonsil was pulled out with forceps.

Dr. WATSON WILLIAMS asked what definite information did we possess regarding the physiology of the tonsils. In rheumatism, which had been ascribed to tonsillitis, he had frequently found the tonsils

atrophied or absent. He did not think, therefore, that enucleation was the best operation, but the question was one which required thrashing out. Enucleation was facilitated if $\frac{1}{150}$ gr. atropine was given hypodermically before the operation, as it lessened secretion and permitted the use of ether followed by chloroform. Enucleation was followed by less pain and hæmorrhage than tonsillotomy, and it was not difficult, but, he asked, was it really universally required?

Mr. LAMBERT LACK held that enucleation should never be the routine operation. Removal of the tonsils by the guillotine in the hands of a skilled operator gave results as good as any other operation. But enucleation should be practised in quinsy and recurrent tonsillitis. The need of getting every crypt away was exaggerated. The throat had many crypts, and to remove them all would be impossible. Mr. Hett's statistics, referring as they did to hospital cases, were fallacious, because at hospitals the operation was most incompletely performed.

Dr. SYME said that enucleation was not necessary in every case, but it was often difficult to decide which operation should be selected. The difficulties of the operation consisted in the need for good forceps and the dangers of a deep anaesthesia. He asked what should be done with the granulation-tissue which filled up the fossa after enucleation. Should it be removed or left alone? He himself generally left it alone. The after-effects of enucleation were more severe than those of tonsillotomy.

Mr. W. STUART-LOW thought that enucleation was best suited for adults with large tonsils and not for children, because in childhood the tonsils were pedunculated, and because a prolonged anaesthesia was requisite. The choice of operation depended upon the way in which the tonsil was attached. If pedunculated the guillotine was sufficient. In enucleating he used forceps and large scissors. He feared that Mr. Hett removed muscle as well as tonsil in operating.

Dr. HARING operated with chloroform anaesthesia, using a tonsillotome with a small ring. He had seen a number of cases with severe hæmorrhage coming on half an hour after operation.

Dr. PEGLER was surprised that so little mention had been made of *morcelement*. He advocated Hartmann's conchotome for the removal of tonsils.

The PRESIDENT said that the trend of opinion seemed to be that the cases should be selected for each operation. He did not think that even the most enthusiastic enucleator would advise enucleation in young children with pedunculated tonsils. Flat tonsils, however, which are still operated on with the guillotine, should be enucleated. The guillotine was sufficient to remove a tonsil entirely if the pillars were freed and forceps used to draw the gland out. His experience showed that serious hæmorrhage did not occur unless some junior surgeon lost his head and became rough in his movements.

Mr. SECOCMBE HETT, in reply, asked if Dr. StClair Thomson could enucleate all tonsils entire with the guillotine. Deep anaesthesia, which had been severely criticised, was in reality the safest plan, because when a patient was deeply anaesthetised there was no hæmorrhage. He asked whether Dr. StClair Thomson had seen any cases of severe hæmorrhage. His own experience was that the severest bleedings followed tonsillotomy.

Dr. STCLAIR THOMSON said he had seen one case of hæmorrhage in which he had to stitch the pillars. He preferred the risk of hæmorrhage to the risk of deep anaesthesia.

Mr. SECOCMBE HETT said that if Mr. Stuart-Low charged him with removing muscle, his reply was that Mr. Stuart-Low left the capsule behind.

Dr. DAN MCKENZIE, in reply, said that while the discussion had revealed considerable discrepancy of opinion with regard to the best way to operate, it also showed that the principles laid down in his paper with regard to the use of enucleation in disease and recurrent hypertrophy had received a general assent. This, he thought, was an important pronouncement.

A NOTE ON HEADACHES IN ASSOCIATION WITH OBSTRUCTION IN THE NASAL PASSAGES.

BY DR. L. HEMINGTON PEGLER.

Headaches associated with nasal obstructions may be classified as follows :

(1) Referred headaches apparently due to nasal obstruction, such as varieties of supra-orbital neuralgia, rhinalgia, and otalgia.

(2) Headaches seemingly due to pressure and such conditions of the nose as favour toxic absorption.

(3) Headaches due to toxic absorption, and including such as are due to deficient oxygenation of the blood.

(4) Headaches associated with nasal inflammatory conditions, including acute cases in which the pain may be attributed to absorption of air in alectruated accessory sinuses.

Nasal headaches from obstruction or toxic absorption can only be distinguished from the headaches of asthenopia, gastric and hepatic derangement, etc., by help of the collateral symptoms of these latter conditions.

Many nasal headaches are unilateral, and hence have come to receive the name of "hemicrania," but the hemicrania of nasal origin should not be confused with the hemicrania of migraine.

Certain regions of the nose seem to be specially liable to induce referred headache. These are the anterior and posterior ends of the inferior turbinal, the anterior end of the middle turbinal, and the septum. The inferior turbinal is liable to cause headache if it presses against the septum. The middle turbinal may be so in the same way, and also if it is polypoid. The septum may be to blame if it is deflected or the seat of spurs, etc. Septal headache is usually supra-orbital in distribution.

Headache from adenoids and other obstructive conditions has been explained by supposing that they interfere with the lymphatic drainage of the intra-cranium through the lymphatics which accompany the branches of the olfactory nerve through the cribriform plate. Or it has been referred to mal-oxygenation of the blood. But the cause is really not yet quite clear.

The diagnosis of nasal headache from headache due to other causes is not easy. If obstruction of the middle meatus by an enlarged middle turbinal is present, however, resection will nearly always cure the headache. But unless it is enlarged the author does not advise its resection.

Relief of the pain by applying cocaine to the nose is a diagnostic point of value.

Dr. W. S. SYME asked whether in any of his cases Dr. Pegler had found chronic ethmoidal or sphenoidal disease. In a case under his own care he had found that headache was due to obstruction of the sphenoidal sinus by the middle turbinal. The retina was also congested, and he explained the headache by supposing that it was reflected pain from congestion affecting the second division of the fifth nerve. In all cases care should be taken to exclude degenerative changes—not necessarily suppurative—of the ethmoidal or sphenoidal sinuses.

The PRESIDENT narrated a case of a woman who came to him with headache. The eyes had been examined with a negative result, and as the middle turbinal was not enlarged he did not remove it. Later on, however, the turbinal was removed by another surgeon with complete success. Such operations, however, could not be relied upon to bring about a cure. If while the patient was suffering from headache the pain was relieved by the application of cocaine or adrenalin, the probability was that the nose was responsible.

Dr. PEGLER, in reply, said that in his paper Dr. Syme would find his questions answered. He thought that removal of the middle turbinal relieved headache sometimes by supplying counter-irritation.

CANCERS OF THE THROAT, ETC.

BY DR. SCANES SPICER.

The paper dealt with the harmful effect of diaphragmatic or belly breathing upon the larynx.

Mr. STUART-LOW said that something more was necessary to induce cancer than simple attrition. It only occurred when the mucous membrane was thin and desiccated.

Dr. PEGLER did not think that it was possible to prevent the movement of the diaphragm.

Dr. SCANES SPICER, in reply, said he was sure that the postural position in breathing was the key to the problem.

DEMONSTRATION ON THE OSTEO-PLASTIC RADICAL OPERATION FOR FRONTAL SINUS SUPPURATION.

BY DR. WATSON WILLIAMS.

A patient was presented on whom the operation had been performed.

TRANSACTIONS OF THE SOCIETY OF GERMAN LARYNGOLOGISTS.

Seventeenth Meeting at Dresden on May 11 and 12, 1910.

President.—Prof. Dr. JURANSZ, Lemberg.

Abstract permitted by Dr. F. BLUMENFELD, Wiesbaden, Secretary.

May 12.—Business Meeting.

(Continued from p. 426.)

A NEW DIRECT METHOD OF EXAMINING THE NASO-PHARYNX AND THE POSTERIOR PARTS OF THE NOSE.

By HERR A. VON GYERGAI (Klausenburg).

The method consists in the introduction of a straight tube into the naso-pharynx, the head being dependent, and the soft palate drawn forward. The inner end of the tube lies close to the posterior margin of the hard palate, while the outer is pressed against the teeth of the lower jaw. The examination is usually carried out under local anaesthesia. Straight tubes are used, 4–20 mm. in diameter and 8–10 cm. in length; they are fixed to the Brüning's electroscope. A suction apparatus is required for the removal of mucus. For the first orientation it is advisable to use a tube of 12–20 mm. in diameter. Narrower ones can be employed afterwards. The adenoid region is inspected, the lateral walls of the naso-pharynx, the mouth of the Eustachian tube, Rosenmüller's fossa, and in the middle line the edge of the septum. In favourable cases the posterior end of the middle turbinated body and part of its lower border can be seen. Between the middle turbinated body and the septum is seen the anterior wall of the sphenoidal sinus, and in front of that the superior turbinal and superior meatus. A tube 4–7 mm. in diameter can be introduced into the Eustachian tube for $2\frac{1}{2}$ cm., so that the middle ear can readily be seen from the external auditory meatus. In suitable individuals it is also possible to introduce a tube into the superior meatus of the nose and into the sphenothmoidal recess. The technique of this method of examination and its advantages were further expounded.

OPERATIONS BY THIS METHOD.

BY HERR A. VON GYERGAI (Klausenburg).

For operative interference a suction apparatus is necessary, and it is advisable to have the tube fixed, so that both hands may be free. The wider tubes are most suitable for operations. The author has recently removed by this method adenoid vegetations, turbinal hypertrophies, choanal polypi, but does not recommend it for every case. He recommends that the sphenoidal sinus be opened by this route.

Herr MANX (Dresden) has had the opportunity of testing this method of examination, and considers it possible in certain cases.

DEMONSTRATION OF PATIENTS.

BY HERR SALZBURG (Dresden).

(1) Case of carcinoma of the nose, which has remained free of return for ten and a half years.

(2) Case of round-celled sarcoma of the posterior wall of the larynx. Complete laryngectomy; cure; no return after ten years.

ATMOCausIS IN OZENA.

BY HERR MÖLLER (Hamburg).

Möller shows from an experience of 100 cases, treated in the Eppendorf Hospital (in Thost's wards) with the apparatus devised by Pincus, that atmocausis can accomplish much in cases of ozæna, either alone or along with other methods which diminish the size of the nasal cavities. The nose is first thoroughly freed from crusts by the use of a solution of peroxide of hydrogen, then 10 per cent. solution of cocaine is sprayed into the nose and also rubbed into the nostril. In addition vaseline is applied to the external parts of the nose, the upper lip, and nostril. The hot steam, 116°-118° F., is allowed to play in each nasal cavity for from one to three seconds. The favourable effects were: loss of feeling of pressure in the head, disappearance of headaches, of the foul smell, and diminution of crusting. Atmocausis did not prove dangerous; in one case only an otitis media was observed, which ran a usual course. The method is applicable to children. Wassermann's reaction was invariably negative.

CONCERNING NEW DIAGNOSTIC APPLIANCES AND METHODS.

BY HEER BRÜNINGS (Jena).

The Window Probe (Fenster Sonde).—Brünings has had olivary bougies constructed of nickel and of graduated thickness with laterally placed, sharp-edged windows, which, by the removal of a portion of tissue, enable the diagnosis of carcinoma of the œsophagus to be confirmed or excluded. The instrument, which the author has used for years, has been employed in forty-one cases of malignant disease of the œsophagus, and the portion of tumour has been removed by the instrument invariably at its first introduction. On the other hand, it could be demonstrated that in the normal œsophagus, or in the case of a simple stenosis, no injury resulted from its use. Brünings is of opinion that the new method is quite reliable and can be substituted for œsophagoscopy in most cases.

(2) *Improvements in the Broncho-electroscope and Bronchoscopy Forceps.*—The reflecting mirror is provided with a slit instead of a central aperture. This avoids the disturbing reflexes, and permits of the introduction of forceps and other instruments of any desired length, as they can be introduced through the slit without any trouble. The telescopic model previously in general use can be replaced with advantage by an instrument of fixed length which is easy to use, and particularly strongly, though delicately constructed.

(3) *Anastigmatic Magnifying Mirror, and Mirror with Enlarged Field of View.*—The attempts which were made as early as the beginning of laryngoscopy to construct a mirror giving an enlarged image of the larynx led to no results, because the concave and obliquely placed mirror caused great distortion. Brünings has shown that this is due to astigmatism, which is readily overcome by cutting the mirror cylindrically on its anterior surface. This anastigmatic mirror permits of an image of the larynx being obtained which is free from distortion, is enlarged two or three times, and which is at the same time better illuminated; it will in many cases replace the plane mirror with advantage.

Brünings has employed the same principle in the opposite way to obtain a reduced image with a larger field of vision. These mirrors are of special service in posterior rhinoscopy. These new types of mirror are manufactured by the Zeiss works at Jena.

(4) *Stereo-laryngoscopy.*—Brünings, who has studied for years the problem of binocular laryngo-rhino-otoscopy, discussed the

theoretical possibilities, in which he has found two quite new solutions. In conjunction with the Zeiss works he has had a number of experimental models constructed, which he is putting to a thorough practical test before he decides on one for general use.

ON A RÖNTGENOGRAPHIC REPRESENTATION OF THE ACCESSORY SINUSES
AND THE TEMPORAL BONE (WITH DEMONSTRATION).

BY HERR BRÜNINGS (Jena).

Brünings first discussed the improvements theoretically and practically possible in the taking of skiagrams of the skull, and showed that the stereoscopic method offered by far the greatest advance, since it "changes the skiagram which is so difficult to interpret into a lifelike and easily understood picture" (Albers-Schonberg). There are two reasons why stereography of the skull has not passed the experimental stage—first, because there is no stereographic apparatus which will permit of the use of a compressor, and secondly, because it was impracticable to double the long exposure without changing the hardness of the tube.

Brünings has overcome these difficulties by the construction of a simple apparatus, in which the compressor moves, so that the circle of light remains automatically in the centre of the plate for the second exposure. This is possible for every kind of oblique exposure. The exposure is further so shortened by the use of a Gehler-screen that the double exposure is finished in 10–15 seconds with normal loading of the tube.

Brünings demonstrated a number of antero-posterior stereoscopic pictures of the head in which the skeleton of the face, the sphenoidal sinns, the temporal bones, and the vertebræ stand out clearly.

Discussion of the clinical importance of this method.

DEMONSTRATION OF AN ENDOSCOPIC SPATULA.

BY DR. KILLIAN (Freiburg).

Killian has had an instrument constructed for direct laryngoscopy and tracheoscopy, of different lengths, which allows the examination to be easily carried out. The pressure can be less than with a tubular spatula. The spatula is V-shaped in section, and makes a furrow in the tongue permitting direct inspection of the larynx; it also readily fits into the anterior commissure, through which it can easily be introduced. Brünings' contra-pressure

method can be carried out at the same time by making the assistant who stands behind the patient press against the cricoid cartilage with his finger.

Dr. A. HARTMANN demonstrated a spatula which differed from the one just shown in its conical-oval form. The examination can be made with the ordinary forehead mirror.

DEMONSTRATION OF A CASE OF SYPHILIS OF THE TRACHEA.

By Dr. WALTER HAENEL (Dresden).

Six pictures were shown which had been taken in the course of five weeks' observation, and the specimen obtained *post-mortem*—a man, aged twenty-six, Wassermann positive. Narrowing of the trachea by a gumma situated close above the bifurcation. Cure after anti-syphilitic course; dyspnoea; temporary improvement from removal of granulations. In spite of dilatation the annular stenosis brought about a fatal result.

CONTRIBUTION TO OUR KNOWLEDGE OF TRACHEAL DIVERTICULA.

By Dr. O. KÄHLER (Vienna).

Endoscopic pictures of tracheal and bronchial diverticula were shown. The cases are doubtless identical with the type described by Chiari, and are to be looked on as rudimentary accessory bronchi. In a male, aged thirty-four, a blind sac was found, about 1½ cm. in depth and 1 cm. above the bifurcation on the right side. In a female a similar one was found at the beginning of the right bronchus. The division of the bronchi was normal in both cases.

EXTREME SWELLING OF THE TRACHEAL AND BRONCHIAL MUCOUS MEMBRANE AFTER REMOVAL OF TRACHEOTOMY TUBE IN A CASE OF PAPILLOMA OF THE LARYNX, CURED BY CURETTING THE MUCOUS MEMBRANE.

By Dr. F. UFFENORDE (Göttingen).

Tracheotomy in a child aged one and a half. The laryngeal condition was not diagnosed on account of the excessive amount of mucus. Eight days later two large papillomata were removed from the true cords after thyrotomy. Moderate stridor supervened after removal of the cannula. Bronchoscopic examination showed succulent swelling of the mucous membrane of the trachea and bronchi. After curetting the mucous membrane there was rapid improvement.

(To be continued.)

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Meeting, 1910.

(Continued from p. 491.)

A CONTRIBUTION TO THE STUDY OF THE SO-CALLED BONE-CYSTS OF THE MIDDLE TURBINATE.

BY DR. ROSS HALL SKILLERN (Philadelphia).

The conclusions reached by the author were :

- (1) These so-called cysts of the middle turbinate are anomalously situated normal ethmoid cells.
- (2) Under certain conditions they can enlarge without the pressure of any pathological product.
- (3) Pathological conditions, such as empyema and mucocoele, contribute towards their enlargement.
- (4) Histological changes in the mucous membrane and bone at the base of the "cyst" are due to mechanical irritation.

ACUTE NEPHRITIS FOLLOWING ACUTE TONSILLITIS.

BY DR. HANAU W. LOEB.

Four illustrative cases were cited ; two were physicians, one the daughter of a physician, and one the wife of a physician. There was no suspicion of the possibility of a nephritic condition until the disease was well advanced. In each instance diphtheria and scarlet fever were excluded ; the nephritis was of the hæmorrhagic non-scarlatinal type, and the tonsillar inflammation was mild in character and the course unusually slow. The nephritis was not discovered in any case until the tonsillar affection had disappeared. This differs materially from the nephritis of scarlatina and diphtheria, in which the physical signs as well as the symptoms of the nephritis are concomitant with the height of the disease. In all cases the nephritis would have been considered as spontaneous or idiopathic if the tonsil affection had not been so closely observed.

The literature of the subject, although exceedingly meagre con-

sidering the importance and gravity of the condition, bears out the author's own observation, particularly as to the course of the nephritis. Less attention has been paid to the character of the tonsillitis itself, which, after all, should be studied with the utmost care.

Dr. WENDELL C. PHILLIPS had not found in his own experience that acute nephritis follows acute tonsillitis in any considerable proportion of cases, though it is probable that it should do so. He was inclined to think Dr. Loeb had taken an extreme view of the importance of this complication. It is well known that ordinarily in the course of follicular tonsillitis one tonsil becomes the seat of the disease, the second morning the other is affected, the third morning the first is well, and by the fourth day all symptoms of the disease have subsided. The persistence of the symptoms in the first case cited by Dr. Loeb would suggest some other deep-seated trouble. In none of the cases cited did the history show that an examination of the urine was made before the attack of acute tonsillitis.

Dr. J. A. STUCKY had long since come to the conclusion that tonsillitis is simply a local manifestation of some systemic condition. He did not believe that nephritis is the result of the tonsillitis, nor did he believe that the local treatment is of as much importance as the systemic treatment. For the pain and ache benzoate of soda is almost a specific, given in ten-grain doses every three hours. Locally nothing is equal to cleaning out the tonsillar crypts and rubbing in argyrol.

Dr. JAMES F. McCaw said Dr. Loeb's paper suggested several similar cases in his own practice. One patient had a subacute follicular tonsillitis, not severe enough to confine him to bed, and he continued to attend to his practice for about one week, when suddenly he seemed to be overwhelmed with sepsis, almost complete anuria, the small amount of urine which was passed containing about 50 per cent. of albumen. Another case was that of a young boy, aged about fourteen, upon whom a mastoid operation had been done. On his return home after ten days following the operation he developed an attack of acute follicular tonsillitis followed by acute nephritis. The urine contained large quantities of albumen and casts for several weeks. It was not likely that this was ether nephritis following the operation, as an analysis immediately afterward showed no trace of albumen.

Dr. NORTON L. WILSON said that in an experience of twenty years he had encountered one case such as Dr. Loeb had described.

Dr. ROBERT LEVY thought the weak point in the discussion hinged upon the diagnosis of tonsillitis. Many mild cases of sore throat had proved to be diphtheria. A bacteriological examination should be made in every case of tonsillitis. It is very often impossible to make a differential diagnosis between tonsillitis and mild diphtheria.

Dr. JOHN A. THOMPSON, of Cincinnati, called attention to a paper published twelve years ago by Wagner, giving his experience with rheumatism following tonsillitis, and stating that he had found the same organism in the tonsils and in the fluid from the joints. Goldthwaite, of Boston, found that it was much easier to find the streptococcus in the joint tissues than in the fluid. The speaker cited a case of acute tonsillitis in a girl who, five days later, developed acute nephritis and died.

ABSCESS OF THE LARYNX, WITH REPORT OF A CASE.

BY DR. JAMES S. WATERMAN.

A man, aged forty-two, when first seen complained of a slight sore throat, hoarseness, and dry, hacking cough. A year before the patient had had incipient tuberculosis, from which he made good recovery under treatment. When examined, the larynx was found to be slightly red and congested. The condition progressed, despite treatment, until on the fifth day the arytenoids showed as full, round masses, pale in colour, and nearly filling the glottis. After deciding that he had to deal with double abscess of the larynx, situated at the summit of each arytenoid, the larynx was cocaineised and the abscesses evacuated, each discharging foul-smelling pus. This was followed by almost immediate relief from dyspnoea. The local condition continued to improve, and the larynx had nearly approached the normal by the seventh day following the evacuation of pus, excepting that the colour was redder than normal, and the vocal cords were intensely congested. On the fifth day after the opening of the abscesses slight dulness was found over the right lower pulmonary lobe anteriorly. Over a small area there were coarse moist râles. This condition had existed for several days, when the patient complained that, on coughing, a mass came into his throat and nearly strangled him. Careful examination well into the trachea revealed nothing which seemed to account for the strangling. The following morning, after a violent fit of coughing, the patient coughed up and expectorated a fleshy mass, two inches long by three quarters of an inch in thickness. The mass, microscopically, consisted of detritus granules, a few epithelial cells, and elastic fibres, with a large number of bacilli, but few cocci, and these not in chains. Dr. Wright subsequently suggested that the bacilli might have been colon bacilli. The patient gradually sank, and died on the sixteenth day of the illness. The case presented the picture of a man who had entirely recovered from an incipient tuberculosis, but who was much below par, apparently dying from a septic pulmonary lesion, the nature of the offending organism being uncertain. Without the gangrene in the lung he would undoubtedly have recovered from the laryngeal condition.

Infectious interstitial inflammation of the larynx, submucous laryngitis, phlegmonous laryngitis, suppuration of the larynx, and abscess of the larynx are terms applied in the literature to the condition described in the case presented. The last term seems

much the simpler, as it includes all of the other conditions, leading up to the abscess. In adults the prognosis is good in those cases operated upon, bad in those upon whom no operation is done. In children the prognosis is bad; five out of eight reported cases died. From four to ten days seems to be the usual time for the abscess to form, and the course to recovery from ten days to two weeks. The case reported seems to be the only one on record where there were two separate abscesses in the larynx occurring at the same time. Cases of laryngeal abscess due to perichondritis are not considered in this paper.

Dr. H. HOLBROOK CURTIS liked better the term "phlegmonous inflammation." It had long been maintained by Semon that the majority of cases of abscess of the larynx were caused by a specific germ, while others contended that a variety of germs might give rise to the same anatomical and pathological picture. Williams had classified septic inflammation of the larynx under five different heads, each of which condition, however, might be due to the streptococcus, the *Staphylococcus pyogenes aureus* and *albus*, the *Bacillus tuberculosis*, the *Micrococcus crysipelatosus*, or the *Bacillus coli communis*. Abscess of the larynx is well known to be less dangerous than the resulting infiltration in the cervical fascia and possibly the mediastinum. Early incision and scarification was the proper treatment.

Dr. B. R. SHURLY added the seventh to the series of six cases which the reader of the paper had said to be the only instances of subglottic abscess reported in the literature. The patient, a male child, aged two and a half years, was admitted to the diphtheria ward of Harper Hospital, December 12, 1909. The pulse was 150, and the axillary temperature 99.6° F. Breathing was extremely difficult, the respirations were of a whistling character, the inspirations were prolonged and the expirations short and hollow. Cyanosis was not marked. Intubation was performed half an hour after admission, with immediate relief. Four hours later the patient coughed up the tube, which was reinserted. The tube was retained for four days without further difficulty, the child took nourishment well, the pulse dropped to 128, and the temperature became practically normal. On the fourth day extubation was performed, but as breathing became more difficult, the patient became cyanotic and the pulse very weak, the tube was reinserted one hour after removal. It was again coughed up within a few minutes after insertion, was again reinserted, and again coughed up, with considerable membrane, five hours later. A few hours' relief followed, but the child's condition then became so alarming that cardiac stimulation was resorted to, and intubation again performed. At the end of twenty hours the tube was once more coughed up. The patient recovered, though the respiration never returned to normal, and when dismissed, twenty-one days after admission, there were evidences of laryngeal constriction. On January 20, 1910, thirty-four days later, the patient was again admitted to the hospital. The respirations were of a wheezy character, and increased from 26 to 32 in two days. Breathing became gradually more difficult, until on the fifth day the patient was cyanotic, and the pulse was almost imperceptible. Intubation was performed with difficulty, but the tube was immediately expelled. Artificial respiration was resorted to and oxygen administered.

Strychnine was given hypodermically. The patient suddenly coughed up a pus-like discharge mixed with mucus, the tube having broken a subglottic abscess. Breathing at once became markedly improved and the pulse stronger. When the patient was discharged, seventeen days after admission, the respirations were only slightly wheezy. On March 10 the patient was again admitted, with temperature 100.6° F., pulse 100, respirations 36, and still wheezy, and with a severe cough. He gradually improved, and when discharged there remained a very slight subglottic stricture.

Dr. W. C. BRAISLIN had found abscesses very common in children after one infection or another, particularly after diphtheria. Early and repeated incisions had given the best results in his experience. Edematous inflammation soon degenerated into a purulent condition, and for this reason every point at all suggestive of oedema should be incised.

Dr. WALTER B. JOHNSON considered the case detailed in the paper as one of phlegmonous inflammation. Abscess of the larynx of traumatic origin should not be placed in the same category with this severe form of inflammation, in which the abscess is only an incident. The inflammatory condition occurs first and lasts for a considerable time, when the breaking-down and abscess formation occur. The discharge in such cases is not the ordinary purulent discharge met with in abscess of the larynx of traumatic origin.

Dr. WATERMAN, in closing the discussion, said the larynx had not been involved in tuberculosis in the case reported. The tuberculous process was situated in the left apex. Lung involvement seemed to be a rare complication in these cases of laryngeal abscess, as he had found no other similar case reported. He would be interested to see the result of the injection of leucocytes in this class of cases.

(To be continued.)

Abstracts.

NOSE.

Coolidge, A., Jun.—*The Etiology of Common Colds.* "Boston Med. and Surg. Journ.," July 14, 1910.

Among the varieties of acute rhinitis or cold is one form so common and so constant in its symptoms that the author classes it as a distinct and definite disease. He then describes the well-known "cold in the head," and discusses its contagion, spread, and incubation period (two to four days). He believes that such colds never start from "chill," "exposure," or similar popular causes. There is much evidence tending to show that such cases are often directly contagious. The disease is carried by sneezing, coughing, embracing, kissing, speaking at close range, by towels, etc. *Macleod Yearsley.*

Aikins, W. H. B.—*Rodent Ulcer of the Nose.* "Canadian Practitioner and Review," May, 1910.

M. L. C—, aged thirty-four, showed old scar-tissue on the left side of the nose above the wing. The wing itself was entirely destroyed, and the skin around the perforation was covered with the hemorrhagic granulations of rodent ulcer. The disease dated back to a twig scratch

fifteen years ago. It had been treated in various ways from time to time, and six years ago was scraped for lupus, breaking down afterwards.

The case being referred to Dr. Aikins, he used radium from a flat varnished surface, one centimetre, with a radio-activity of 500,000, at intervals for six weeks, the exposures varying from fifteen to thirty minutes, the course of improvement being watched and the treatment repeated in accordance with the requirements of the case. After the first three exposures improvement commenced, the discharge lessened and the pain ceased. Rapid absorption of the neoplastic tissue took place and healing of the margins followed. Some months later the patient wrote that the nose was in a fine healthy condition, and that there had been no return of the disease. Of course the perforation, with its margins healed, still remained awaiting repair by a plastic operation.

Price-Brown.

PHARYNX.

Lance, M.—*When and How should the Tonsils be Removed?* "Gazette des Hopitaux," March 31 and April 2, 1910.

In this article the physiology and embryology of the tonsils are referred to, and the subject of discrimination in their removal is fully discussed. Differing from Bosworth, the writer considers the tonsil a normal organ playing the well-defined *role* of barrier to the inroad of infection, and that this function is exercised so long as its epithelial covering remains intact and it has not become a pathological organ. Simple hypertrophy is not a pathological condition; far from constituting a disease, it is the expression of resistance to infection. In favour of this view it is noted that the subjects of large, soft tonsils projecting into the pharynx are generally robust, healthy children, rarely suffering from cervical adenitis, also that during dentition the tonsils are observed to become enlarged and subsequently diminish. Their removal under these conditions, therefore, only becomes necessary when definite troubles, subsequently to be mentioned, are caused by their presence. Tonsils chronically inflamed demand removal, for they no longer act on the defensive, but become a ready portal for the entry of infection, *e.g.* tuberculosis, septicæmia, pyæmia, phlebitis, acute nephritis, endocarditis, pleurisy, meningitis, appendicitis, and rheumatism; in the cases of the last named, though the pathogenetic entity is unknown, statistics show that removal of chronically inflamed tonsils has a salutary effect on the articular attacks. With regard to tuberculosis, the bacillus may traverse the tonsils without leaving any lesion there, as may obtain in the case of the intestine, but usually lesions are induced with which it is necessary to be acquainted.

Lee, Machard, and Jonathan Wright's description of tubercular tonsils is quoted, as follows: In sickly, anæmic children, the subjects of chronic tonsillitis, in whom the concatenate glands are enlarged and hard, one finds the tonsils pale, small, and submerged, often filling the recess above, and advancing deeply towards the velum. The crypts are filled with caseous matter, which can be expressed with the end of a tongue-depressor; the free border of the anterior faucial pillar is congested. The results of the histological examination of a number of enlarged tonsils are recorded, which substantiate the fact that it is not the large, soft, pedunculated tonsil where tubercular lesions usually occur; they are, for the most part, found in the small, submerged, chronically inflamed tonsil.

A very important fact noted was that the lesions existed, especially at the bottom of the crypts, at the base of the tonsil, so that were the superficial portion of the organ alone removed the greater portion of the disease would remain in the stump. In conclusion, tonsils should be removed in young children:

(1) When they are much hypertrophied, interfering with respiration and thoracic development, affecting deglutition and speech and favouring infection of the naso-pharynx and middle ear.

(2) When they are small and submerged and clinically of the tuberculous type, accompanied by cervical adenitis.

(3) When chronically inflamed and giving rise to attacks of fever without any other apparent cause.

(4) When suppurating and associated with entero-colitis.

In older children and adults:

(1) When chronically inflamed in rheumatic subjects.

(2) Whatever their size, when the seat of acute inflammatory attacks (relapsing abscess, simple recurrent lacunar tonsillitis, etc.) leading to functional troubles or keeping up relapsing anginas, rhino-pharyngitis, otitis or laryngitis.

The following are given as contra-indications to surgical treatment.

(1) Any inflammatory attack or recent congestion.

(2) During epidemics of influenza, eruptive fevers, diphtheria and mumps, it is better to wait.

(3) In cases of suspected hæmophilia.

(4) During menstruation.

(5) In cases where general anaesthesia is refused but is absolutely necessary for performing the operation.

(6) When the operation is refused.

In the last two cases caustics (chromic acid, trichloroacetic acid, and nitrate of silver) are recommended to be applied down to the bottom of the crypts.

Concerning the methods of removal, the merits and demerits of tonsillotomy and tonsillectomy are very fully discussed, and the technique of the respective operations described at length. A copious bibliography is appended.

H. Clayton For.

LARYNX.

Monson.—*Foreign Body in the Larynx; Report of a Case.* "The Cleveland Med. Journ.," April, 1910.

A female child, aged six months, in whom a piece of tinfoil remained lodged in the larynx for three months, the child dying some few days after a low tracheotomy.

Macleod Yearstey.

Prota, Prof. G. (Naples).—*Two Cases of Traumatic Laryngoplegia from Wounds in the Neck.* "Archiv. Ital. di Laring.," 1909, p. 165.

The author contributes an interesting account of the history and literature of this affection. He gives full clinical notes of two cases of his own. In one the left recurrent was wounded either by the weapon itself or by inclusion in the cicatrix of the deep wound. The second man had five stabs, one of which necessitated ligation of the left jugular and common carotid. Owing to necrotic changes the latter vessel had to be tied a second time a few days later lower down. There was hoarseness from the time of the injury, and the laryngoscope showed complete

paralysis of the left vocal cord. After healing there was an ugly cicatrix on the side of the neck, pressure on which or turning the head to the right produced attacks of spasmodic cough. In both cases electrical treatment was tried, but the patients disappeared before any result was attained.

James Donelan.

ŒSOPHAGUS.

Jackson, Chevalier.—*Œsophagoscopic Removal of Open Safety-Pins by a New Method.* "Laryngoscope," April, 1910, p. 446.

The method is devised for the removal of safty-pins lodged in the œsophagus point upward. A special forceps having sharp pin-like points seizes the safety-pin by the ring in its centre; the forceps and pin are pushed onward into the stomach, in the free cavity of which the pin is easily and safely turned so that the point is now downward. If the pin is small it can be withdrawn through the tube; if large, the forceps carrying the pin and the œsophagoscope are withdrawn together.

Dan McKenzie.

EAR.

Rolleston, H. D.—*Rheumatic Nodules on the External Ears.* "Brit. Med. Journ.," August 6, 1910.

Man, aged twenty-one, who developed tophi, during an attack of acute rheumatism, which diminished in size during convalescence.

Marleod Yearsley.

Schwarz, Gottwald.—*On the Application of the Röntgen Rays to Otology.* "Monats. f. Ohrenheilk.," Year 44, No. 6.

The apparatus for this use, says the author, must be of the highest order so as to minimise as far as possible the many difficulties which this form of investigation presents. It must be furnished with means for taking instantaneous pictures, and the best tubes are those of medium hardness. It is claimed that the following data can be obtained from this means:

The character of the bone (diploëtic, pneumatic, sclerotic), distribution and size of the cells, thickness of the cortex, size and thickness of the labyrinth capsule, size and shape of the mastoid process, of the pyramid, of the ridge of bone separating the two cranial fossæ, of the tympanic ring, of the mandibular fossa, and of the tegmen antri, size and position of the outer and inner meatus, position and depth of the sigmoid sinus; position, and frequently form and size, of the vestibule with the ampullæ. Position of the cochlea. Also often, and in children always, one can detect the antrum (its position and form), the attic (though this seldom), the cochlea, the canals, and the jugular bulb.

Herschell has also utilised the rays to control the decalcification of bone in the preparation of microscopical specimens, which is of course less detrimental than testing the condition with a needle.

Foreign bodies, such as bullets, can of course be localised, but for this the screen is more convenient.

Fractures of the base of the skull may also be detected, though this the author admits may be difficult.

In both acute and chronic inflammation of the middle ear the rays afford great diagnostic help. Pictures are taken in two positions—the one with the head lying on the side and the ear on the plate, whilst the tube is placed vertically over the contra-lateral parietal eminence. The

other picture is taken from behind, with the frontal eminences applied to the plate, the chin pressed down on the chest, and the patient lying on his stomach. By this latter means a simultaneous photograph can be obtained of both ears, a point of considerable advantage.

Blurred indistinct shadows of one mastoid process in connection with chronic middle-ear disease indicate otosclerosis.

One-sided acute middle-ear catarrh gives a hazy picture, the cellular structure of the bone being almost indiscernible. Such haziness disappears after the healing of the acute condition in a fairly short time. Acute mastoiditis affords a similar and indistinguishable picture. As regards the prognosis in acute middle-ear disease, it is of the utmost importance to know if the mastoid is markedly pneumatic, as in these cases the bone is very apt to become affected.

Anatomical data, as referred to above, may also be of great help to the less experienced as an indication of what may be expected in the operation. The extent of the invasion of destructive growths may also be determined.

As regards the therapeutic action of the X-rays in otological work, Schwarz sounds a note of serious warning as to their possible harmful effects, and the great care with which, therefore, they should be applied for this purpose. This particular branch is still in its infancy, but the author has apparently seen beneficial effects from the use of Röntgen rays in cases of chronic eczema, lupus, scrophulo-derma, epithelioma, one case of "otitis sclerosa," and in one case of chronic otitis media.

A bibliography concludes the article, which is rather disappointing, and would perhaps have been of more value had it been postponed till more practical clinical data could have been described.

Alex. R. Tweedie.

REVIEW.

The Ear and its Diseases. By ALBERT A. GRAY, M.D., Laureate of the Lenval Prize, International Medical Congress, 1909. Fellow of the Royal Society of Edinburgh, Surgeon for Diseases of the Ear, Victoria Infirmary, Glasgow, Surgeon for Diseases of the Ear and Throat, Glasgow Cancer Hospital, author of "The Labyrinth of Animals." With stereoscope and 123 illustrations, of which 37 are stereoscopic. London: Baillière, Tindall & Cox, 1910.

Similar as text-books of the usual size on diseases of the ear must necessarily be, it would be most surprising if one from the pen of Dr. Albert Gray failed to present features peculiarly its own. Dr. Gray's name is now one of world-wide celebrity, mainly on account of his remarkable contributions to the study of the structure of the internal ear, not merely in man, but in many of the lower animals. He has also added what we consider a most elucidating analysis of the methods of conveyance of sound to the internal ear, explaining better than any other writer the reason for the retention of hearing for high-pitched tones, in spite of the presence of a considerable amount of disease of the conducting apparatus. His use of aniline oil to assist the penetration of the tissues by local anæsthetics is, in spite of its occasional untoward effects, an idea which reflects the greatest credit on its ingenious deviser. Dr. Gray's work has been crowned by the awarders of the Lenval Prize for the greatest additions to the means of benefiting the deaf.

The work now before us comes with a great reputation to maintain, and it does so most worthily. Constructed on the model of the necessarily

stereotyped text-book, it is bound to contain a certain amount of conventional information such as is found in its many predecessors, but it conveys this in a closely reasoned form which is quite its own and such as we could count on from its author. It also gives us some new things, or, at least, new views of things, which are at the same time refreshing and informing.

It may be said at once that what we may call the conventional part of the work will meet all the requirements of the student or of any reasonably exacting practitioner, so that neither will have to look elsewhere in his general otological difficulties. The specialist will, moreover, find many lacunæ in his knowledge filled up by the material contained in Dr. Gray's work, and the teacher who omits to recommend it to his students will fail seriously in his duty to them. The author goes to Nature for his material, and the photographs, of which thirty-seven are stereoscopic, of preparations actually made by him afford a basis for a sound understanding of the normal and pathological anatomy of the middle, and especially of the internal ear, such as no other text-book will afford. Among other points we may note the excellent account of inflammation of the tympanic membrane (myringitis), which some well-known writers ignore (p. 161), also the occurrence of digestive and other marasmic disturbances in infants as the main symptoms of middle-ear disease (p. 170). Dr. Gray's sound common sense manifests itself in a somewhat dogmatic manner in several places, as, for instance, when he declines to weary his readers with an account of the various intra-tympanic operations for the relief of deafness produced by non-suppurative inflammation of the middle ear (p. 237). The unavoidable rhinology "in a nut-shell" of the otologist is contained in ten pages (pp. 114-124), and though the practitioner would be unwise who confined to them his studies of diseases of the nose, he would find it difficult to find anywhere else in the same space so much condensed judgment and decision for his guidance. The experienced and observant can quite confirm Dr. Gray's cautious attitude with regard to operations on nasal sinuses (p. 123) other than the maxillary antrum. In his description of Rinne's test (p. 81) Dr. Gray departs slightly from the generally received one, and he would include among the "positive" a few slight cases which would, according to most writers, be considered "negative." In the usual definition the tuning-fork is placed first on the mastoid. We do not seem to have come across in this work the important instruction to pull the ear downwards when inspecting the tympanum in infants, but this may be an oversight. In view of the importance Dr. Gray properly attaches to the diagnosis of inflammation of the middle ear in these subjects this trifling point seems worth emphasising. In the first chapter Dr. Gray gives some excellent mathematical details which we ourselves find rather flattering to our academical vanity, but we fear that they may frighten some worthy, though less erudite, persons, and as the explanations are quite clear without them, we should suggest their being relegated to a footnote, an appendix, or a special paragraph in small print.

Dr. Gray's countrymen are justly proud of what he has done, and they have no reason to feel otherwise with regard to this work.

D. G.

CORRECTION.

IN MR. Macleod Yearsley's translation of Dr. de Ponthière's article, p. 466, line 5 from foot, for "puerperal" read "perpetual."

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**THE ANATOMY OF THE CAPSULE OF THE TONSIL, AND
ITS SIGNIFICANCE IN THE TREATMENT OF DISEASES
OF THE TONSIL.¹**

BY G. SECCOMBE HETT, M.B., F.R.C.S.,

Laryngologist, Mount Vernon Consumption Hospital; Assistant Surgeon,
Throat Hospital, Golden Square.

The Anatomical Connections of the Capsule.—The capsule closely invests the tonsil and sends septa into that body. The supratonsillar fossa is included within it, and the blind end of the latter is only separated from the capsule by a very thin layer of lymphoid tissue (Plate II). Towards the side of the tongue the capsule blends with the connective tissue which surrounds the lymphoid follicles in that situation. This lingual prolongation, usually known as the lingual tonsil, consists of two bilateral portions, which in many instances form a direct prolongation of the palatine tonsil on either side, insomuch as they can be removed in one continuous strip with the tonsil, when the latter is enucleated, owing to this connection of the capsule (Plate I, fig. 7).

The upper portion of the capsule is surrounded by a loose areolar tissue space—the peritonsillar space. There is only a potential space round the lower portion of the capsule, for the muscular fibres of the palato-glossus and the palato-pharyngeus

¹ Read at the London Meeting of the British Medical Association, Laryngological Section, July 19, 1910.

form a close investment to it. These fibres are interlaced with one another, and with those of the superior constrictor, and some of the latter are directly inserted into the capsule itself (Plate I, fig. 8).

The Blood-supply of the Tonsil and its Relation to the Capsule.—The vessels supplying the tonsil are the ascending palatine and tonsillar branches from the facial, the ascending pharyngeal from the external carotid, branches from the dorsalis linguæ from the lingual, the descending palatine from the internal maxillary.

The branches from the facial are the largest, and enter the capsule after piercing the superior constrictor. They reach the capsule in its lower part, and running upwards, ramify on its outer surface. They then divide into branches which pass into the tonsil along the connective-tissue septa, with the exception of some which pierce the capsule at once to supply the lower portion of the tonsil.

The branch from the descending palatine pierces the upper part of the capsule and supplies the imbedded pars palatina and the posterior pillar.

One or two branches of the dorsalis linguæ reach the lingual surface of the tonsil, and supply the anterior pillar, the plica triangularis, and the lingual prolongation.

The Relation of the Lymphatics to the Capsule.—The lymphatics of the tonsil run in the connective-tissue septa, accompanied by the vessels to the capsule, which they pierce. After ramifying on its outer surface they form three to five trunks, which pass downwards and backwards to the point at which the muscles closely invest the capsule, and pierce the superior constrictor with the arterial branches from the facial.

They then pass to the superior gland of the median deep cervical chain (jugulo-digastric), which lies on the internal jugular vein under cover of the posterior belly of the digastric. Some of the veins pass behind, some in front of the internal jugular vein.

The lymphatics of the base of the tongue communicate in the sinus tonsillaris with the above set. These supply the lingual prolongation and pass as efferents with the branches of the dorsalis linguæ, then with the lingual artery to the deep cervical glands (superiores mediales).

The lymphatics of the lingual prolongation and base of the tongue also communicate across the mid-line with the set of the other side, although it is not always possible to inject this anastomosis.

The Capsule and its Relation to the Discharge of Secretion from the Crypts.—During the act of deglutition the palate is raised and pressure is brought to bear on the tonsil from outside, and this acts especially on the movable portion of the tonsil in the peritonsillar space. The lower portion of the tonsil is fixed by the attachment to it of the muscles, and the margins of the opening of the sinus tonsillaris are kept apart by the palato-glossus and palato-pharyngeus.

The upper part of the tonsil surrounded by the peritonsillar space alone is movable, and this is pressed downwards and inwards between the pillars by the action of the extrinsic muscles. The openings of the supra-tonsillar fossa and the crypts, as a consequence, tend to be inverted and the secretion discharged.

The Capsule in Relation to Inflammation of the Tonsil.—In chronic enlargement of the tonsil the capsule does not become increased in thickness or undergo a corresponding hypertrophy. In tonsils which have undergone acute inflammatory changes the capsule is unaffected, but at its junction with the tonsil the pillars may become adherent.

A type of tonsil common in adult life is that in which the plica triangularis undergoes a lymphoid proliferation, and then the plica with its lymphoid tissue often forms the main mass of the tonsil. In this case the relation of the capsule is apparently disturbed, although this is not really the case—it is that the plica itself may be mistaken for the tonsil proper.

In peritonsillar abscess the supra-tonsillar fossa is obstructed, consequently the crypt opening into it from the pars palatina cannot drain. Infection spreads to the lymphatics of the capsule and an abscess forms in the peritonsillar space. The abscess cavity corresponds to the peritonsillar space, and is limited below by the adherence of the constrictor to the capsule. This intimate relationship of the muscle with the lower part of the capsule explains why the tonsillar abscess commonly points in the palate instead of tracking downwards. In a paper in the *Journal of Anatomy and Physiology*, by Mr. H. G. Butterfield and myself, stress was laid on these points, and also on the fact that the supra-tonsillar fossa is really always intra-tonsillar—that is to say, it is always surrounded by the capsule of the tonsil. This is well seen in the illustrations of mammalian tonsils.

After a quinsy has been developed some days and the palate is bulging, a probe passed up the supra-tonsillar fossa may be forced through the capsule and the pus evacuated by this route. This

does not allow of very efficient drainage and is not to be recommended as adequate treatment, but it demonstrates that the abscess has not burst through the capsule, either from the supra-tonsillar fossa to the peritonsillar space, or *vice versâ*.

After quinsies adhesions form between the capsule and walls of the space, so that the latter becomes more or less obliterated, and if the tonsil is then dissected out an artificial division has to be made instead of the tonsil shelling out. I have found that the adhesions are most marked in the neighbourhood of the anterior pillar (probably at the point where the abscess burst or was opened), and that when this point is passed the natural cleavage plane can usually be entered.

The Rôle of the Capsule in Removal of the Tonsil.—The treatment of tonsils which are septic or subject to recurrent inflammation resolves itself into one word—removal. But round the method of removal there has raged and still rages a controversy. Let us see whether any points in the surgical anatomy of the tonsil and its capsule bear upon the much-discussed topic.

(1) As to whether it is necessary to remove the tonsil with its capsule complete in the treatment of unhealthy tonsils.

(2) If the complete removal is necessary, how the anatomic relations of the capsule bear upon the steps necessary to effect this.

Tonsils which require removal can be roughly divided into:

(a) Those in which the tonsil is deeply imbedded, so that it does not project much between the pillars. In these cases the pars palatina is the most developed, and there is a dome-shaped mass surrounded by the capsule, projecting into the peritonsillar space. This is the normal shape of tonsil in the first years of life (Plate I, figs. 3 and 8).

EXPLANATION OF PLATE I.

FIG. 1.—Tonsil of seven months' fœtus.

FIG. 2.—Tonsil of eight months' fœtus.

FIG. 3.—Imbedded tonsil of male, aged fourteen, showing free plica triangularis.

FIG. 4.—Atrophied tonsil of male, aged forty. The supra-tonsillar fossa can still be seen.

FIG. 5.—Tonsil of female, aged twenty, showing three tonsillar masses and lymphoid tissue in plica triangularis.

FIG. 6.—Projecting tonsil of male, aged nineteen, showing large plica triangularis and three tonsillar masses.

FIG. 7.—Tonsil of female, aged twenty-five, showing well-marked lingual prolongation.

FIG. 8.—Tonsil dissected from the outer side, showing interlacing of muscular fibres over the lower part of the capsule.

ST. Supra-tonsillar fossa. PTF. Plica triangularis. PLS. Plica semilunaris or supra-tonsillar. PI. Plica infra-tonsillar. PP. Plica prætensillar. M¹. Upper or posterior tonsillar mass. M². Middle tonsillar mass. M³. Lower or anterior tonsillar mass. P. Anterior pillar of fauces. T. Pars triangularis. LP. Lingual prolongation.

HUMAN TONSILS.

FIG. 1.

PLATE 1.



FIG. 2.

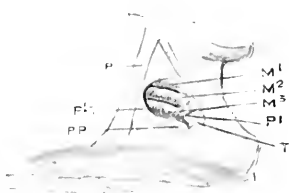


FIG. 3.

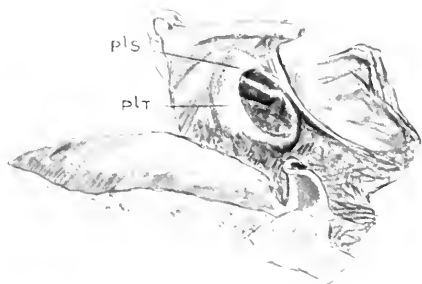


FIG. 4.

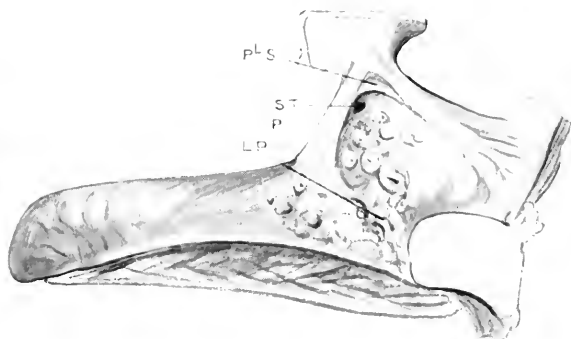


FIG. 5.

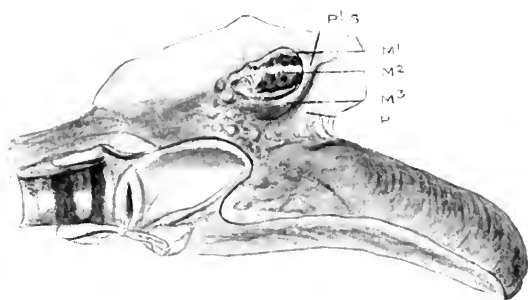


FIG. 6.

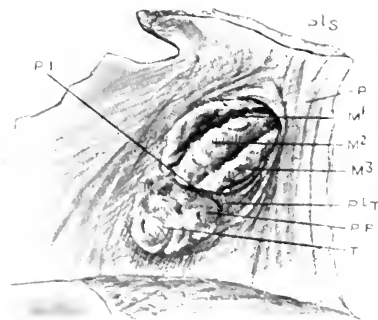


FIG. 7.



FIG. 8.



(b) The tonsil which has proliferated mainly between the pillars and in which the capsule is flattened, and the pars palatina is not dome-shaped, but has retrograded. This is seen in later life, but may be combined with the previously mentioned condition (Plate I, fig. 6).

(c) The small septic tonsil with little lymphoid tissue, seen often in adult life as a result of the normal atrophy of that period, plus cicatricial tissue, a result of old inflammation (Plate I, fig. 4).

(a) and (c) do not project and are not easily removed by the guillotine, and are the types in which a dissecting operation or form of enucleation is now generally recommended. (a) The embedded tonsil of early childhood is usually removed because of cervical adenitis, and not because of symptoms of sore throat. Now if removed for this reason, *i. e.* because the tonsils are acting as a source of infection, a complete removal is indicated, for if a portion of the tonsil is left, it may still continue to act as a source of infection. (c) is small and tough, and often has adherent pillars, and sepsis, not size, is here, as generally, the determining factor, and symptoms of recurrent sore throats render removal necessary, so that here also a complete operation is indicated.

Granted, then, that in these cases, at any rate, a removal of the whole tonsil is required, it is obvious that the capsule must be removed in its entirety, for it forms the boundary limit of the tonsil and is closely connected with it. Now if we examine a series of tonsils, removed by the guillotine without previous separation of the pillars, we shall find that the capsule has been cut through, and consequently some tonsil has been left in a large proportion, and this whatever the means employed, whether by volsellum traction and guillotine, or by forcing the tonsil through the guillotine ring from without. The examination of tonsils removed by the guillotine will demonstrate this. It has been urged that the failure to remove the tonsil is due to the lack of practice of the operator, but I have collected a large series removed by experts on the staff of our leading special hospitals, and the result has been that very few tonsils thus removed have the capsule complete. Further, in some cases where it has been effected without previous separation of the pillars I have seen severe hæmorrhage, whereas by a properly performed enucleation this is conspicuous by its absence. In certain cases, after the use of the guillotine, sore throats take place just as before the operation, and in others re-proliferation takes place. In a certain department where I worked for two years a black list was kept of hospitals where tonsils had been

SECTIONS THROUGH HUMAN SUPRA-TONSILLAR FOSSÆ.

PLATE II.

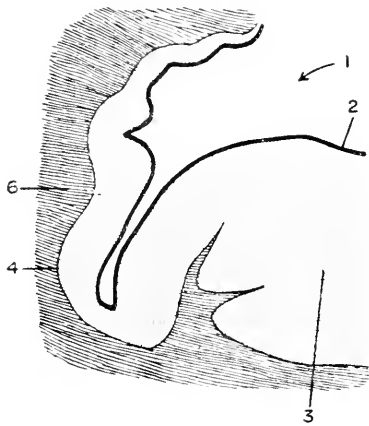


FIG. 1.—Longitudinal section through supra-tonsillar fossa of full-time fetus.

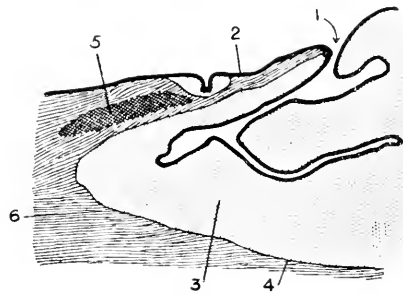


FIG. 2.—Longitudinal section through supra-tonsillar fossa of female, aged fifteen, showing crypt opening into fossa.

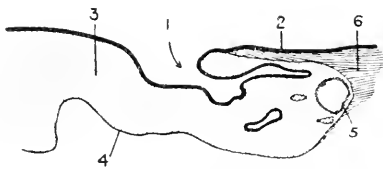


FIG. 3.—Longitudinal section through supra-tonsillar fossa of male, aged thirty-nine.

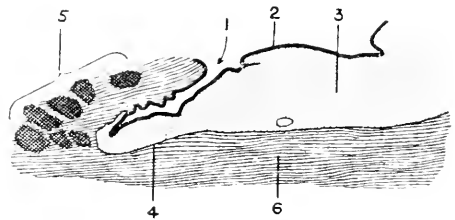


FIG. 4.—Longitudinal section through supra-tonsillar fossa of female, aged forty-eight.

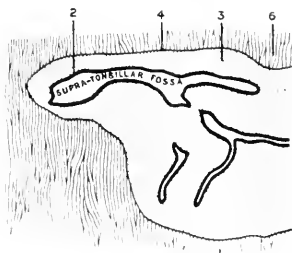


FIG. 5.— Transverse section through supra-tonsillar fossa.

1. Supra-tonsillar fossa. 2. Epithelium covering tonsil and lining supra-tonsillar fossa.
3. Lymphoid tissue. 4. Capsule of tonsil. 5. Mucous tissue. 6. Connective tissue.

removed, and which came for treatment owing to recurrent symptoms. In these cases the tonsils had been removed on one or more occasions. The list was impartial, nearly every throat department in London being equally represented. In private practice the same thing obtains. I recently performed enucleation on a boy of nine years, whose tonsils had been removed twice by a most distinguished operator. On cutting sections through the removed tonsil, which was both large and crowded with organisms, we were much struck by the very active cell divisions in the deeper layers of the tonsil in the neighbourhood of the capsule. A similar condition was observed in another case in which I performed enucleation for continuance of sore throats, after use of guillotine punch, forceps, and cautery. Mr. H. G. Butterfield and myself have noted the same thing on several occasions, showing the necessity of the removal of the capsule, from the point of view of its neighbourhood being a possible centre for the new cell division.

Lastly, the removal of the tonsil with the guillotine does not prevent the subsequent formation of quinsies, but with enucleation and consequent removal of the capsule there is no longer any peritonsillar space, and consequently no peritonsillar abscess can form. As regards the method of operation to ensure complete removal, the essential is the primary separation of the pillars, for the capsule can then be defined and is readily separated and removed entire with the contained tonsil by any of the various methods in vogue.

The Role of the Capsule in Tuberculosis of the Tonsil.—We know that tubercle bacilli can be demonstrated in certain cases of enlarged tonsils, and that these tonsils themselves may show no clinical sign of the disease, although liable to be the cause of tubercular adenitis. In these cases there is nothing to be said in regard to the capsule beyond what has been already mentioned.

In cases where there is a gross tubercular lesion of the tonsil the resistance of the capsule to infection is seen. The tubercular process seems to expend itself along the path of least resistance, *i. e.* towards the pharynx. The infiltration and ulceration spreads and involves the pillars, and the lymphoid tissue is eaten away down to the capsule without the latter giving way. A specimen shown here illustrates this. It is from a man aged twenty-six, in whom it appeared as a terminal infection with advanced chest signs.

I have a patient aged twenty-six, whose tonsils I have seen at

intervals for six months at the Out-patient Department of Mount Vernon Hospital. He has deep excavating ulcers, but the capsule is still apparently intact, although the pillars are becoming infiltrated. A portion removed showed typical tubercular structure and tubercle bacilli. These two cases represent the acute and

MAMMALIAN TONSILS.

Macroscopic drawing.

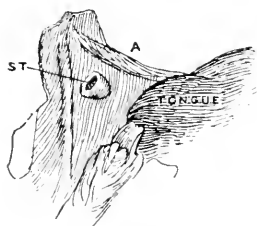


FIG. I.—Moustached monkey.

Microscopic section.

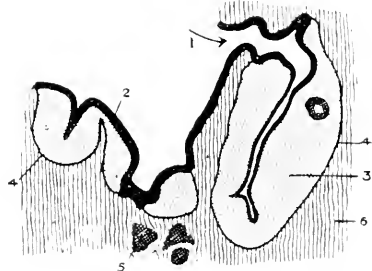


FIG. I A.—Also shows lingual prolongation.

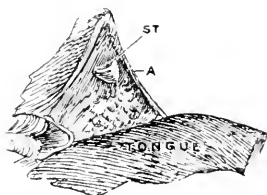


FIG. II.—Vervet monkey.

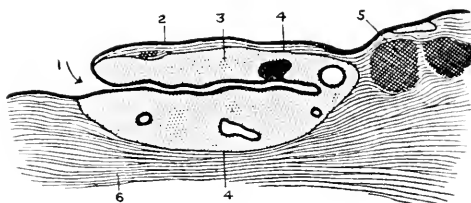


FIG. II A.

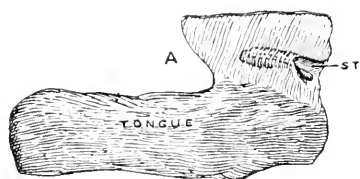


FIG. III.—Cat.

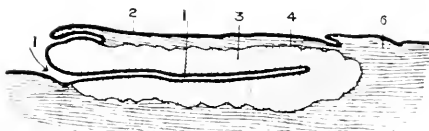


FIG. III A.

chronic types respectively, and in both types the same resistance of the capsule is seen. What is true about the infective processes is also true of tumours, and has an important bearing on the treatment of the latter.

The Capsule of the Tonsil in Relation to the Removal of Tumours.—It is not proposed here to deal with carcinoma of the tonsil, as the disease tends early to involve the palate and jaw and not to be

limited to the tonsil. In studying other malignant tumours of the tonsil such as the sarcomata, I have been much struck by the manner in which these tumours grow in lymphoid tissue and tend to be intra-tonsillar until very late in the disease, even when there

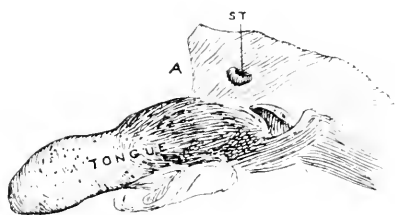


FIG. IV.—Crab-eating opossum.

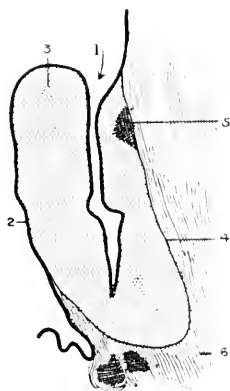


FIG. IVA.

are quite inoperable secondary masses in the neck, and it is this fact of the integrity of the capsule which offers suggestions as to the practicability of their removal. There are two places where these tumours tend to transgress the limits of the capsule, and these, as might be expected, are at the points where the latter tends to be

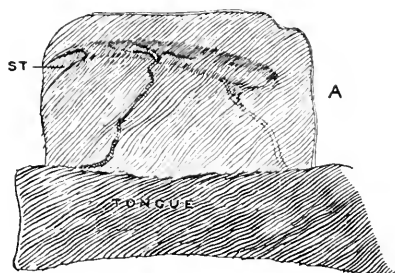


FIG. V.—Persian leopard. ST, Supra-tonsillar fossa. A, Anterior pillar.

Letters and numbers used in these figures the same as in Plates I and II.

indefinite. They are at the pillars of the fauces and in the neighbourhood of the lingual prolongation. In removing these tumours it is necessary to leave the anterior and posterior pillars of the fauces attached to the tumour when it is removed and also to take away the lingual prolongation in one piece with the tumour.

The Role of the Capsule in Malignant Tumours of the Tonsil.—

The choice of operation in malignant tumours of the tonsils is sometimes a question of difficulty, but if the relations of the capsule are understood many cases can be operated on successfully by the intra-buccal method.

There are several advantages in the intra-buccal operation. A large tumour can be delivered through the mouth and the integrity of the pharyngeal wall is maintained. This is an advantage where an extensive dissection of the glands has to be done, whereas by the other means a large opening into the pharynx would be necessary to get the tumour away from the neck. Also it may be necessary to remove a large mass of glands in the neck before obtaining access to the tonsil from outside, and hence the risk of a pharyngeal wound communicating with the opened-up fascial planes of the neck.

It is a disadvantage to have to sever the jaw, and even by von Volsen's method there is not much room for the dissection. The advantage of the external operation is that a better view of the lower lingual portion is obtainable, and it is easier to tell what margin of healthy tissue must be taken from the side of the tongue. An advantage claimed for it is that it is possible to remove the tonsil and its infected gland in one piece, as though the lymphatic channels running between the two could be included. We know, however, from recent injections that while some of the vessels run in front of the internal jugular to reach the jugulo-digastric gland, others run behind the vein, and still others in front of the belly of the digastric, so that a removal in continuity of all infected channels is obviously impossible.

Lastly, if the relations of the tonsils are known, and we realise that in such cases these are not disturbed owing to the integrity of the capsule, a type of extended enucleation can be effected, which has been, in my experience, very satisfactory. In addition, it has the already-mentioned advantage that a few days after removal of the primary growth a dissection of the glands can be effected without any risk of sepsis from the pharynx or interference of relations of structure, as after a previous opening from outside.

The microscopic sections illustrating this article were made by Mr. H. G. Butterfield, of University College Hospital.

A CASE OF PARASITE OF EXTERNAL MEATUS.

BY DR. HEMMEON,

Seattle.

On April 29, 1910, a Polish labourer, who spoke little English, presented himself. He carried a letter from a physician who had seen him in the country, stating that the bearer was suffering from an acute inflammation of the middle ear. Through an interpreter the patient said that there was pain which had lasted three days. No previous history obtainable. On examining the ear fresh blood was first encountered in the meatus. This being wiped off, swiftly crawling bodies were seen, which, on removal with forceps, presented the appearance of fully developed grubs about three quarters of an inch in length, white in colour, showing a bright red spot in the alimentary canal, evidently blood drawn from the ear. It was not possible to determine whether this blood was extracted from the tympanic membrane or from the lining of the meatus. Although the grubs moved swiftly they showed no disposition to leave the meatus. No pus was found in the meatus, and the membrana tympani was intact, though red. The meatal walls were red and excoriated, but whether this was due to the foreign bodies or to a previous eczematous condition it was not possible to tell. The patient was not seen again. He was unclean in person, and there may have been odorous natural secretion in the external meatus. At the time of seeing him there was a sour, cheesy odour from the ear. The grubs, two in number, were placed in a wide-mouthed glass bottle lightly plugged with cotton. Five days later, after an absence from home, an assistant pronounced the grubs "dead." I found two smallish chrysalides in the bottom of the bottle about three eighths of an inch in length. At the end of the eleventh day a fly of the common "blue-bottle" type was hatched from one. The other did not hatch, and when opened revealed a fully developed dead fly.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL
SECTION.

Friday, October 21, 1910.

MR. A. H. CHEATLE, *President, in the Chair.*

(*Abstract Report by* DR. DAN MCKENZIE.)

DISCUSSION ON SYPHILIS IN RELATION TO OTOLOGY.

The PRESIDENT, introducing the discussion, gave an exhaustive description of the pathology, symptoms, and treatment of syphilis as it affects the ear, in the course of which he said (*inter alia*):

With reference to congenital syphilis, the disease seemed to be changed in its passage through the mother to the child, as the organs affected by the congenital disease and its response to treatment differ markedly from what is the rule in the acquired disease.

There was no evidence, he thought, to prove that the disease ever caused lesions *in utero* of such a nature as to produce deaf-mutism, and as a cause of deaf-mutism he held that syphilis had been over-rated.

With regard to the influence of sex, it was remarkable that the female was more prone to the congenital disease than the male.

As to the age of sufferers from congenital syphilitic deafness, the impairment of hearing usually set in between six and sixteen years, though sometimes it was earlier and sometimes later—even as late as thirty years—and two cases had come under his observation in women of fifty-two and fifty-five years. After relating several histories to illustrate the onset and course of the different types of congenital syphilitic deafness, the speaker remarked that in most cases during childhood a remnant of hearing in one ear usually remains after the brunt of the storm has passed; later in life, however, this remnant disappears.

The lesions of congenital syphilitic deafness would probably be found in the labyrinth, the absence of facial paralysis and of fever and headache excluding the nerve-trunk and meninges respectively. Onset with vertigo suggested that the lesion was produced

by exudation into the labyrinth, while, if it appeared without vertigo, the internal auditory meatus was probably the site of the disease, as in Walker Downie's classical case of osteitis leading to obliteration of the labyrinth and stenosis of the internal meatus. In the cases tested by the caloré method he had found the vestibular reaction absent.

The ear-disease was associated with other specific lesions, such as keratitis, the onset of which generally closely preceded the attack on the ear.

As to diagnosis, it might be laid down, as a rule, that internal ear deafness and vertigo, coming on between the age of five and twenty-five years and not due to any other obvious cause, were due to congenital syphilis.

In the matter of treatment the usual remedies failed—a circumstance that was inexplicable. Repeated blistering of the mastoid, originally recommended by Prof. Pritchard, had afforded the best results, especially when it was begun early and continued for months or years. Pilocarpine should be employed during the first three weeks.

He urged the necessity of preventive treatment by means of anti-syphilitic remedies during infancy in order to lessen the chances of serious ear mischief in later life. In most of the cases under his care he had elicited from the mothers the fact that little or no treatment had been carried out in early life.

Turning to the acquired disease, he reminded the Section that the secondary rash had been known to affect the membrane. Among other secondary phenomena condylomata of the external meatus should be mentioned, although they were not often seen. He himself had only had four cases, and had been struck with their intractability. Dr. Dundas Grant had recently shown such a case before the Section; it would be interesting to know the subsequent history of that case.

While otitis media was a common enough result of the secondary throat, he had never seen suppuration of the ear as a consequence. Nor had he ever discovered the *Spirochæta pallida* in an ear discharge.

During the secondary stage the perceptive mechanism might be affected, either lightly or seriously. As a rule it yielded to mercury.

In discussing the influence of the syphilis of the tertiary periods upon the ear, he alluded to the occurrence of gummata of the adenoid region as worthy of notice. This appeared as an irregular,

firm swelling covered with muco-pus. It frequently lead to deafness.

The paper was brought to a conclusion by the recounting of cases illustrative of the several types of syphilis of the perceptive mechanism.

Prof. URBAN PRITCHARD, having thanked the President for a full and thorough exposition of the subject, expressed his agreement with the remark that congenital syphilis might cause deafness late in life. He had found that interstitial keratitis might follow the appearance of the deafness, a succession which sometimes led to diagnostic error, especially in childhood. He described the first case in which he had tried repeated blistering. He had been struck with the fact that slight returns of the deafness, after the initial attack were also got rid of by further blistering. He had seen secondary and tertiary lesions of the meatus which closely resembled epithelioma.

Mr. C. E. WEST remarked that to ascribe nerve-deafness in late middle life to syphilis, because the patient had at one time suffered from syphilis, or because of cloudy corneæ, was improper. He had been struck with the fact that the deafness of congenital syphilis might come on while the patient was under anti-syphilitic treatment for the eyes. About 100 cases of chancre of the Eustachian tube had been recorded, mostly in France, and during the pre-antiseptic period; they were obviously due to catheterisation. He, like the President, had seen very few cases of mental condyloma; pain was a marked symptom in this condition. He had encountered one case of deafness with facial paralysis in a patient who had contracted syphilis six years before. The facial paralysis disappeared in fourteen days.

Mr. WHITEHEAD thought that interstitial keratitis followed deafness oftener than was sometimes supposed. He had found the simultaneous presence of peri-synovial gummata of the knee-joint useful in establishing the diagnosis of syphilis. Referring to syphilitic deafness he drew attention to the frequency of a combined middle-ear and perceptive deafness. Although the perceptive element predominated, yet there was frequently a considerable element of middle-ear deafness present. He had found that while condylomata were obstinate they nevertheless ultimately disappeared, and did so without leading to any cicatricial contraction.

Mr. MACLEOD YEARSLEY said that his experience was in complete agreement with the greater part of this paper, but there was one point at which he joined issue, and that was in regard to deaf-mutism. It was stated that "the disease never causes lesions *in utero* as to produce deaf-mutism." Was there any absolute proof of this remark? He pointed out that Baratoux, in the examination of a number of still-born syphilitic infants, found ear lesions, chiefly purulent middle-ear inflammations, adhesions of the membrane to the promontory, hæmorrhages and accumulations of pus in the labyrinth, and destruction of the organ of Corti. Although this was the only instance in the literature that he was at present aware of concerning ear lesions in syphilitic still-born infants, he thought it was suggestive that the disease might cause deafness before birth. That the majority of cases of deaf-mutism were produced as the result of lesions in early childhood was true, but that, as a cause of deaf-mutism, syphilis had been over-rated he denied emphatically. Hahn,

Kerr Love, Mygind, and Castex had written upon the subject, and Kerr Love had given the percentage from his personal experience as 1·8 per cent. Castex found it present as a cause in 2·75 per cent. of the cases in the Paris institutions. The percentage of deaf-mute cases in London was much higher. He had recently published a paper on the subject in the *JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY*, in which he gave the results of the examination of 500 children in the London County Council deaf schools. Among these there were seventeen undoubted cases of congenital syphilis, nine boys and eight girls, which gives a percentage of 3·5, or, taking the acquired cases alone, of 7·5. A disease which caused 7·5 per cent. of the cases of acquired deaf-mutism in a large city like London could hardly be described as "much over-rated." He added that he had continued his examinations and had found more cases, so that the percentage was kept up. As regards the statement that there was no proof that otosclerosis was due to syphilis, congenital or acquired, he was in cordial agreement. He agreed with Mr. Whitehead that there was frequently concomitant middle-ear involvement in these cases of congenital syphilitic internal ear deafness. It was comparatively uncommon to meet with a normal membrane.

Dr. DAN MCKENZIE had recently seen a case which showed how futile ordinary anti-syphilitic treatment could be in preventing or curing syphilitic deafness. The patient was a woman, aged fifty-four, suffering from an uncommon condition—gummata of lymphatic glands of the neck. He had mistaken them for tuberculous glands, and they had been excised. Pathological examination by Dr. Wingrave raised the question of syphilis, and when they recurred, six weeks after the operation, the patient was put upon mercury and potassium iodide, with the result that the glandular swellings in the neck disappeared. At the very time when this was going on the woman was seized with deafness and vertigo, and entirely lost her hearing in about six weeks. Pilocarpine proved useless; blistering, however, was not tried. With reference to the vestibular reactions, he had found them active in one case of congenital syphilitic deafness, but in all the others he had tested they were inert. He referred to a recent paper by Otto Mayer,¹ who had found lymphocytic infiltration of the auditory nerve and of the labyrinth in children who had died of congenital syphilis, as tending to support Mr. Macleod Yearsley's contention that syphilis might be responsible for congenital deafness. The speaker further recalled Gerber's description of syphilitic middle-ear deafness as tending to affect the labyrinth early in its course.

Mr. McDONAGH warned members that congenital syphilis led to a positive Wassermann reaction throughout the whole of the individual's life, consequently a positive Wassermann in a case of deafness in later life could not, for this reason alone, be properly ascribed to congenital syphilis. He had, so far, treated with "606" only one case in which there was deafness due to syphilis. The hearing improved after treatment. Ehrlich had up to the present treated 12,000 cases without a single case of optic neuritis or atrophy; on the other hand, two cases of optic neuritis had been cured by the injection.

Mr. SIDNEY SCOTT asked if the Wassermann test was so certain that a single negative was sufficient to exclude syphilis.

Mr. McDONAGH, in reply, said that a single negative was not enough to exclude acquired syphilis, but one negative Wassermann was enough to exclude the possibility of the congenital disease.

¹ *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, p. 615.

Mr. CHICHELE NOURSE asked whether blistering was as useful in congenital as in acquired syphilis.

Mr. H. J. DAVIS related a case in which a condyloma was removed in mistake for a polypus. The dry state of the meatus did not favour the occurrence of a condyloma, unless, that is, there happened to be some ear discharge.

Mr. WAGGETT had found that tertiary ulceration of the posterior pharyngeal wall was, at times, a cause of severe otalgia. He also had seen very few cases of middle-ear suppuration in syphilis, and he referred to one in which facial paralysis appeared some weeks after the performance of the radical mastoid operation.

The PRESIDENT, in reply, said that the cases of deafness in later life attributed by him to syphilis could not be accounted for in any other way, and he took every care in the diagnosis.

TRANSACTIONS OF THE SOCIETY OF GERMAN LARYNGOLOGISTS.

Seventeenth Meeting at Dresden on May 11 and 12, 1910.

President.—Prof. Dr. JURASZ, Lemberg.

Abstract permitted by Dr. F. BLUMENFELD, Wiesbaden, Secretary.

May 12.—Business Meeting.

(Continued from p. 550.)

A BINOCULAR STEREOSCOPIC LARYNGEAL TELESCOPE.

BY DR. HEGENER (Heidelberg).

It is only possible to see the laryngeal image with one eye, as a clear image is obtained at a distance of 25 cm.; binocular vision has, therefore, to be dispensed with. The same holds good for posterior rhinoscopy and otoscopy. The reduction of the angle of convergence can only be produced by optical instruments. If the normal appearance is desired the image, which has apparently receded, must be brought nearer; this is done by the use of a telescope. The advantages of stereoscopic binocular inspection are so great as to justify the use of complicated apparatus which is necessary for stereoscopic examination. The estimation of distance and depth is improved, and the appreciation of the solidarity of an object is made easier. It is, therefore, of special value in the inspection of the minutest changes in the larynx. The telescope constructed by Hegener was described. This telescope is not

intended to be used in substitution of ordinary methods of examination, but as an adjunct to them in special cases.

DEMONSTRATION OF A NEW JOINT FOR THROAT, NOSE, AND EAR INSTRUMENTS.

BY DR. A. KUTTNER (Berlin).

The advantages of this joint are the following:

- (1) It is easily separated and put together, it is readily disinfected, and is not liable to go out of order.
- (2) It permits of the use of great force.
- (3) It is equally suitable for laryngeal, throat, and ear instruments.
- (4) The beak of the instrument does not slip on closure.

ETHMOIDAL NEUROSES.

BY DR. KILLIAN (Freiburg).

Killian understands by the term "ethmoidal neuroses" all those reflex neuroses which come from the anterior part of the nasal mucous membrane, *i. e.* from the area supplied by the nervus ethmoideus. He wishes to assign a special position to these neuroses. It is known that stimulation of the sense of smell may produce reflex neuroses, but typical cases seem to be unusual. Reflex neuroses are also seldom produced in the posterior areas of the nose. An accurate knowledge of the anatomical and physiological conditions is, of course, necessary. These were detailed by the aid of diagrams. Killian next pointed out that chemical and mechanical irritation of the ethmoidal region occurs, and in our method of living, especially in closed rooms. The dust in cities also plays a part. Coarser particles are stopped at the nostrils, others follow the course of the inspired air towards the middle turbinated body. This can be readily seen in patients who work in dusty atmosphere; it can also be demonstrated experimentally. The continued stimulation by the impure air of the sensory nerve-endings causes hyperæsthesia. This is the foundation and beginning of every case of reflex neurosis. To form a proper opinion sensory tests are necessary. It is advisable to use a probe armed with wool in order to determine the degree of irritability. Killian has often found areas of hyperæsthesia in the region of the ethmoidal nerve. The degree of hyperæsthesia can be determined in two ways: (1) Through the subjective sensations as to the degree of irritation

or pain ; (2) through the objective results of irritation, the clinical significance of which varies. Killian distinguishes between local, regional, and distant effect of irritation. The local results are hyperæmia and hypersecretion in the region of irritation and round about ; as a regional effect, feeling of irritation at the inner canthus of the eye, of the inner parts of the eyelids, and of the conjunctiva, hyperæmia of the conjunctiva and a flow of tears. As a distant effect there is, first, nasal cough, which is always to be looked upon as a pathological reflex, and also sneezing ; this is also a reflex in which the vagus participates. The last group of symptoms comes under the same category as asthma. The last can only be produced as a nasal reflex if the asthmatic neurosis is established already. The action of the heart can also be reflexly affected from the nose ; Killian has observed a characteristic case in an infant. The existence of the ethmoidal neuroses is explained by Killian as due to a summation of stimuli, which, occurring in daily life, produce new and more powerful reflexes, whose disturbing effects are looked on as neuroses.

It must not, however, be denied that cases of nasal asthma occur which do not proceed from the ethmoidal region. From these considerations the treatment is arrived at. The passage of air through the nose must be free, because the particles of dust collect far more in a narrow nose. In asthma anything which disturbs the nasal breathing must be put right. In addition cauterisation of particular areas of the mucous membrane will give good results. If success is not attained by this treatment a break may be made in the reflex path. In ethmoidal neuroses the trunk of the ethmoidal nerve can easily be reached and divided, as Eugene Yonge and Neumayer have already done. The technique of the procedure was further described. Killian's experience extends to but one case.

Dr. NEUMAYER described two cases of nasal asthma which he had treated successfully two years ago by resection of the ethmoidal nerve. In a third which he had treated a year previously the result was not so successful. Neumayer investigated the sensibility of the nose after section of the nerve and found it diminished.

Dr. BOENNINGHAUS referred to neuralgia of the ethmoidal nerve and mentioned definite tender spots found in that condition.

Dr. ARONSON recalled his experimental investigations on the physiology of the sense of smell. He considers the tuberculum septi to be the most hyperæsthetic area in the nose.

Prof. HARTMANN referred to the value of simple cocaineisation of the nose. He has also seen reflex neuroses arising from the posterior part of the nose.

Herr KILLIAN (Freiburg) (in conclusion) : The discussion had con-

firmed his contention that reflex neuroses are set up in the anterior areas of the nasal mucosa. An accurate division of the various nerve areas of the nose is desirable.

THE IMPORTANCE OF THE SO-CALLED PRIMARY TONES FOR VOICE PRODUCTION.

BY DR. HUGO STERN (Vienna).

A primary tone in the physiological sense is the tone produced by the vibrating vocal cords, *i. e.* the pure laryngeal tone such as is produced by the excised larynx. It is a thin, delicate tone, very different from that proceeding from the mouth. The sound which teachers call primary is something quite different. Gntzmann proposes that this sound be called primary singing tone to avoid confusion. Stern is of opinion that by listening alone a proper estimation of the primary singing tone cannot be made, for his own experience has shown him that the muscular sense and muscular memory of the singer is also of great importance. He comes to the conclusion, after quoting a number of authorities, that: The primary tone is that tone from which a systematic development of the voice can proceed. It is the tone which, with proper respiration and use of the vocal cords, and correct formation of the upper air-passages and suitable position of the larynx, permits of the greatest resonance, and which by its freedom and proper conduction, throws the least stress on the larynx and the most on the peripheral parts. It is, finally, the tone which calls into play the muscular sense and memory of the singer, and allows the greatest intermingling of the chest and head tones, and has in consequence an equalising effect on the registers.

OBSERVATIONS ON PUPILS OF SINGING.

BY DR. NADOLECZNY.

Nadoleczny first pointed out the effect of changes in the nose in altering the resonance, and the extreme importance of having this put right, while he does not think that so much stress should be laid on the effect of thickening of the lateral bands. He could confirm Imhofer's observation of acute fatigue of the vocal cords where there was commencing defect of single tones. He also observed disturbances in fourteen singers of both sexes who were not fully trained. Irritation in the neck, desire to cough, pain after or during singing, feeling of weight and fatigue were the

symptoms complained of. In these cases there is frequently difficulty in voice production within a definite compass. It is necessary to test the voice throughout its compass in various ways; errors in breathing and articulation must also be looked for. Pneumographic tracings show that the normal respiratory curve described by Gutzmann is lost in these disturbances of the voice. Usually there was a too rapid fall in the abdominal curve, less frequently also in the breast curve. Nadoleczny has also observed the position of the larynx in these disturbances, and found that the larynx rises with the higher notes. He had previously noticed that the larynx rose when the voice was in bad form, while the normal movements were observed when the voice returned to the normal. He also found that palpation of the larynx is a diagnostic aid. Nadoleczny remarked that these observations are of more value to the teacher of singing than to the pupil. He uttered a warning as to the risk of conscious exaggeration of one or another method of breathing, and of forcing on the part of the singer, and so producing stiffness of the body unfavourable alike for the general condition and for the voice. He lays great stress on the psychical effect of singing exercises.

THE CHANGES IN THE UPPER AIR-PASSAGES IN PREGNANCY, PARTURITION, AND DURING THE PUERPERIUM.

BY DR. IMHOFER.

Imhofer comes to the following conclusions:

During pregnancy and the puerperium conditions of intumescence undoubtedly occur in the upper air-passages, including the nose and the larynx, and in the latter especially in the inter-arytænoïd region.

These swellings gradually disappear during the puerperium, and, indeed, the length of the period of rest in bed seems to exercise some influence. During parturition itself the upper air-passages are not affected, but in long-continued and difficult labours hyperæmia and congestion of the larynx may become apparent.

There are no data in support of the view that the intumescence of the inter-arytænoïd region, in spite of its similarity to a tuberculous infiltration, is itself tuberculous or predisposes to that condition.

Hæmorrhage occurs in the upper air-passages during pregnancy

and during or shortly after parturition, but it is not so common as is stated in the literature.

Laryngeal pareses are rarely to be attributed with certainty to pregnancy.

The practical importance of these observations is to be found in recalling the fact that where there is already narrowing of the larynx, especially of a tuberculous nature, a dangerous increase may occur during pregnancy, but in practice this danger is not great; it is much more important to remember the risk of making a false diagnosis, especially of tuberculosis.

The changes in the upper air-passages in pregnancy, parturition, and during the puerperium can all be satisfactorily explained by purely mechanical conditions.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Meeting, 1910.

(Continued from p. 555.)

CARCINOMA OF THE UVULA.

BY DR. EDGAR M. HOLMES.

A new growth in this locality can be easily removed if only the operation can be performed in the early stages of development, before it has extended into the palate and into the tonsillar area. Early in the disease there is much less chance of the cervical lymphatics being infected, and there is, of course, much less of the surrounding tissue to be removed, and therefore there is much less resulting deformity.

There is a particular reason for haste in removing malignant growths from this locality, as the lymphatics drain into the sub-maxillary and deep cervical glands.

The diseases which may simulate in appearance carcinoma of the uvula are syphilis, tuberculosis, traumatism, Vincent's angina, and pemphigus. Of these, syphilis is by far the most common. A necrosing syphilitic gumma may produce absolutely similar appearances macroscopically to those produced by malignant new growths. Occasionally a tuberculous ulceration may produce a

similar appearance to carcinoma, but it is very rare to have a tuberculous ulceration of the uvula, and when this does occur there is almost always tuberculosis of the lungs. The other conditions named very rarely produce a condition in the uvula simulating malignant disease.

When a new growth located in the uvula has not advanced the operation is comparatively simple, but often the process has extended into the pillars and into the tonsillar tissue, and the operation is then not an easy one. The question must always arise as to the removal of the glands into which this area drains. In view of the accompanying shock, the fact that one side is as apt to be involved as the other, that both sides may be affected, and that they may be infected on the side showing less marked advance in the original growth, it would not seem advisable, in the author's opinion, to remove all the glands at the time of the first operation unless there were some signs of disease in one or more of them.

The history of a case was detailed. When the patient, a man, was first seen, the uvula was gone, and at its site was an ulcerated granular area surrounded by a nodular growth involving the pillars of the left side. There was no swelling of the deep cervical glands. This growth was removed, together with the pillars of the fauces and the tonsil. Microscopic examination confirmed the diagnosis of carcinoma. There was no local return of the disease, but a year later the patient returned with a swelling in the right side of the neck. Superficial and deep glands of the neck were enlarged, also one gland under the tongue. An attempt was made to remove all the glands of the neck, but some were found to be softened and necrotic, rupturing and discharging into the wound upon attempted removal. About two months after this operation the patient returned with a swelling behind the sterno-cleido-mastoid muscle. A week later this was fluctuating, was incised, the incision opening into a cavity filled with pus and necrotic material. Four days after this erysipelas developed on the right side of the neck and face. He recovered from this, but later the whole right side became involved.

Dr. GEORGE B. WOOD emphasised the importance of removing the lymphatic glands of the neck at the same time that the mass in the throat is removed. The specialist does not see these cases, as a rule, until there is some lymphatic involvement, perhaps only microscopic, so that the lymph-nodes are not palpable. If the disease is confined to one side of the throat the hæmorrhage is easily controlled by first ligating the external carotid artery. The functional results of large operations upon the soft palate are not so bad as they have been represented to be. In all

the cases he had operated upon he had never seen one in which there was nasal regurgitation, and in two cases, which were alive up to the present time, there had been no change in the voice despite the fact that the greater part of the palate had been removed. If the hæmorrhage is controlled it is possible to do an extensive removal of the tissues of the throat through the mouth without any serious consequences, but the fatalities from the operation are enormously increased when external pharyngotomy is performed.

Dr. JOHN A. THOMPSON cited a case of carcinoma of the tonsil with involvement of the cervical glands, upon which he had operated. The neck was opened, all diseased glands removed, the external carotid tied, and the wound closed. The growth in the mouth was then removed. The patient lost only about a drachm of blood. The starvation method of tying off the arterial supply had been recommended in some of these cases. A few days ago this patient, a man, aged seventy-two, with hard arteries, complained of difficulty in swallowing. Careful examination showed the side of the throat and neck operated upon to be perfectly clear, but a large sarcomatous mass had developed on the other side of the tongue. When malignant disease is found in the nose or mouth as a rule there is a focus somewhere else in the body. The surgeon in the case cited advised the use of Coley's fluid, with which he had had excellent results. While not always curative, it seemed to lessen the danger of recurrence.

Dr. GEORGE L. RICHARDS cited a case in which the pathologist made a diagnosis of sarcoma. There was involvement of one side of the uvula, of the corresponding portion of the arch, of the upper one third of the anterior and posterior pillars, and of the upper part of the tonsil. It was covered by a thin membrane, which was removed with difficulty. The diagnosis was for a long time in doubt, the pathologist first reporting from an examination of the membrane that it was a fungous growth. The growth was nodular, and a piece of this taken off for examination proved to be sarcoma. There was for a long time no macroscopic involvement of the glands. The first involvement of the glands occurred on the opposite side. Once the glands became involved they enlarged very rapidly, those on the side on which the uvula was affected becoming larger than the others. The axillary glands also became involved, and the condition terminated fatally.

Dr. HOLMES, in closing the discussion, maintained that unless the glands are known to be diseased it is radical surgery to remove them. In the case cited it would have been necessary to remove the glands of both sides of the neck, which would have entailed considerable hæmorrhage and shock. Inasmuch as the disease was carcinoma Coley's fluid was not employed.

THE EFFECT OF TOBACCO AND ALCOHOL ON THE EAR AND UPPER RESPIRATORY TRACT.

BY DR. H. O. REIK (of Baltimore).

The scarcity of trustworthy literature on this subject is very striking. Much that has been written is valueless because not based upon accurate observation, and the attitude of the authoritative text-books on diseases of the ear, nose, and throat is somewhat

surprising. The majority of them have either ignored the question, apparently content with classing tobacco and alcohol among the possible causes of local disease, and devoting not more than a paragraph to the entire consideration of the subject. The explanation may be that experimental investigations for the proof of theories are so difficult of performance in this particular field, and that these authors have wisely preferred silence to vague theorising.

The consideration of alcohol may be dismissed with a few words. There is no reason to suppose that it directly affects the mucous membrane even of the pharynx, and the indirect action upon the upper respiratory tract is so involved with the general systemic effects as to be difficult to trace.

From a careful survey of the trustworthy literature upon the subject under consideration, the author draws the following deductions concerning tobacco :

(1) It does not appear—at least it has not been proven—that tobacco causes any definite characteristic lesions of the nose, throat, or ear.

(2) While it is possible that the excessive use of tobacco may, by indirect action, produce a toxic effect upon the olfactory and auditory nerves, with resulting impairment of the sense of smell or of hearing, there is not at the present time any definite laboratory proof for such an opinion, nor is there sufficient clinical evidence to substantiate the belief.

(3) The ill-effects of tobacco smoke upon existing diseases of the throat arising from other causes is established, and is the same as would be observed from any other form of irritation.

(4) That gastric and systemic nervous disturbances may arise from excessive use of tobacco in any of its forms is unquestioned; the nicotine content of tobacco is a recognised poisonous substance, and in the process of smoking there are evolved other injurious chemical products.

(5) That carbon monoxide is probably a more dangerous and injurious constituent of tobacco smoke than is nicotine, only a very fractional amount of which ever enters the tissues.

(6) That if there is any more danger to be anticipated from cigarette than from cigar smoking, it is to be looked for wholly in the inhalation of the smoke; cigarette smoking without inhaling is no more injurious than is pipe or cigar smoking.

Dr. PHILIP D. KERRISON said that he personally had never seen a case of deafness which could be definitely traced to alcohol or tobacco.

He had, however, treated a few cases of tinnitus in which distinct benefit had resulted from moderating or stopping the use of tobacco. In no case was the tinnitus completely checked by stopping the use of tobacco. In the literature of the subject he had failed to find much that was definite, with the exception of a few cases reported by Bezold. Bezold's cases occurred among medical students who for several weeks had been drinking excessive amounts of beer. The symptoms complained of were tinnitus and marked deafness, which more or less promptly disappeared after the drinking was stopped. According to Bezold's theory prolonged excess in alcohol produces irritation of the auditory nerves, resulting in a functional disorder, which disappears after the drinking of alcohol in any form has been discontinued. It was to be regretted that in the present state of knowledge there could not be traced, with any degree of certainty, a causal relation between aural symptoms and the excessive use of the drugs under consideration.

Dr. NORVAL H. PIERCE said he would not positively assert that there is such a thing as "nicotine ear," but he was inclined to believe that there was, and attempted to paint the clinical picture. With otoscopy negative, and auscultation of the Eustachian tube negative, there is in these cases no absolute loss of tone perception, no islands or defects, but as the scale ascends there is a diminution in duration for tuning-forks. This loss is not confined to any particular area, but extends over the entire length of the scale. High notes with the Edelmann whistle are not heard, but around C⁴ there is a decided lessening in duration. Bone-conduction is slightly decreased in duration. Tinnitus may be slight or absent. The peculiar feature is the deafness or extreme hardness of hearing for words of all these pitches. He cited the case of a lawyer who was an excessive smoker, using eighteen cigars a day, and who complained of a steady increase in hardness of hearing. He was told to stop smoking and to take 5 gr. of iodide of potassium a day, which is supposed to eliminate nicotine. In a month he returned, and whereas he could previously hear such words as "zig-zag" five or six inches from the ear, he could then hear them ten or fifteen feet away. No other treatment had been instituted but the abstinence from tobacco and the administration of 5 gr. of potassium iodide thrice daily.

Dr. J. R. SHEPPARD, with reference to the effect of tobacco on the auditory nerve, said, of course, the tuning-fork tests merely show that the nerve is involved, whether the cause be syphilis, alcohol, or tobacco, making no difference in the tests. He had had, perhaps, as many as ten cases of extreme nerve-deafness in which he had noted, with a question mark after it, tobacco as the probable aetiological factor. In two or three of these cases, stopping the tobacco and giving iodide of potassium had resulted in distinct benefit.

Dr. ROBERT H. CRAIG, of Montreal, spoke from personal experience of the effect of tobacco upon the hearing, being himself particularly susceptible to its influence. Excessive smoking considerably diminished his hearing. He attributed it to congestion of the naso-pharyngeal tract and Eustachian tubes, caused by irritation of the smoke. He also observed that many patients suffering from chronic catarrh of the middle ear found their hearing markedly affected by the use of tobacco.

Dr. EDWARD B. DENCH had had the same results, with slight modifications, as those mentioned by Dr. Pierce, in testing the hearing of patients who smoked excessively. He had found diminution in bone-conduction for a fork of 256 double vibrations per second, and a diminution to aërial conduction in the middle portion of the musical

scale—that is, from 512 double vibrations per second to 2048 double vibrations per second. Whether or not this impairment was due to the excessive use of tobacco he could not say, but he had often found this condition in some patients who smoked excessively, and the hearing improved upon cutting down the tobacco consumption. He had found the internal administration of strychnine of much value in these cases.

Dr. REIK, in closing the discussion, called attention to the fact that the wide differences of opinion existing on this question had been well illustrated in this discussion. Drs. Pierce and Dench looked upon a loss of high notes as possibly characteristic of tobacco deafness, while Wingrave believed the only definite lesion to be a loss for low notes.

FOREIGN BODY IN RIGHT BRONCHUS, REMOVED BY LOWER BRONCHOSCOPY.

By DR. CHARLES W. RICHARDSON (of Washington, D.C.).

The patient, a young woman, had inspired a piece of a large rubber ink-eraser, which was supposed to have lodged in the right bronchus. Radiographic picture displayed a large foreign body lodged in the right bronchus, protruding slightly into the trachea. The patient was in fair condition. There was no cyanosis, and cough was entirely absent. The only complaint was of soreness and a tired feeling about the neck and upper part of the chest. Respiratory sounds were absent over the whole of the lower portion of the right side of the lung. An attempt was made to remove the foreign body by upper bronchoscopy under chloroform narcosis. A Killian tube readily passed through the larynx and down to the foreign body, but as the illumination was imperfect, and as the efforts at removal under such conditions were obviously impracticable, it was decided to do a tracheotomy and resort to lower bronchoscopy. A Jackson tube was introduced through the tracheal opening. Numerous efforts were made to remove the object by different forms of grasping forceps, but without success. None of the forceps possessed sufficient width of grasp to encompass the broad end of the presenting foreign body. Every effort was attended with the removal of small pieces of the rubber of which the eraser was made. Recognising the futility of further efforts, it was decided to desist until a proper instrument for the purpose could be made. An instrument was constructed, consisting of a steel rod of about 2 or 3 mm. in diameter, about 20 cm. in length, the distal end of which was made into a screw form for about 1 cm. of its length. With the body firmly fixed, as was evident through the efforts at removal, it was thought feasible to engage its presenting end in the mouth of the tube, and thus

firmly held, to screw into the eraser the instrument described. The next day, under cocaine anæsthesia, the Jackson tube was again passed through the tracheal wound, the foreign body was engaged in the end of the bronchoscope, and the screw-provided rod was carefully made to penetrate the substance of the eraser. Several attempts were made at removal, each being attended with failure on account of the screw tearing loose in the effort to deliver the body through the tracheal wound. The wound was then enlarged, and the fourth attempt proved successful. The body had remained in the bronchus for thirty hours, and caused no reaction whatsoever. It gained access to the bronchus by being inspired during an epileptic paroxysm. The patient made an uneventful recovery.

Dr. HARRIS P. MOSHER, of Boston, said in some ways Dr. Richardson was fortunate in the character of the foreign body with which he had to deal. The rubber was so large that Dr. Richardson had difficulty in making his forceps grasp it. In a recent article the speaker had touched upon the importance of having the forceps exactly suited to the foreign body. When the case will permit it he prefers to delay the attempt to extract a foreign body until a duplicate of it is obtained, upon which the grasp of the forceps can be tested. He cited two cases from which he learned a good deal. Both were cases of direct laryngoscopy, not cases of bronchoscopy. In both of these cases there was a tumour springing from the anterior part of the vocal cord. The first patient was a young sailor of fine physique. In his larynx there was a cystic growth which sprang from a pedicle which was placed just below the left vocal cord, about two thirds of the way forward. Under ether he had the greatest difficulty in seeing the growth. All the instruments known to him were tried, including the triangular fenestrated tube. The best that he was able to accomplish was to remove the larger part of the cyst. The pedicle could not be got. Later under cocaine various right-angled instruments were tried through the mouth under the guidance of the mirror. Other men beside himself tried in this manner, but the result of all their efforts amounted to practically nothing. Soon after this a case was referred to him in which there was a small fibroma of the left cord. As in the first case, the growth was situated well forward. It was easy to see it with the mirror, but the physician, a laryngologist of experience, was not able, after repeated trials, to grasp it. He felt sure, and the speaker shared the feeling, that under ether it would be a simple matter to remove the tumour. Under ether, however, the same difficulties were encountered as presented in the case of the young sailor. Instrument after instrument was tried and discarded, until finally he went back to a small bronchoscope about ten inches long and a quarter of an inch in diameter. With this he was able to get in behind the last tooth and to shoot diagonally across the larynx and pin the growth inside the tube. He had the tumour pinned, as it were, against the wall and could deal with it as he pleased. Shortly after this the same tube and the same manipulation were successful in removing the pedicle of the cystic tumour from the larynx of the sailor. With the sailor the procedure was more difficult, in fact, in the attempts to corner the pedicle the tube was considerably twisted. It

would seem from these two cases that where there is a growth on the anterior part of the vocal cords the use of the small bronchoscope is suggested. With the small tube the growth can be seen when other instruments fail to disclose it; with the small tube the growth can be pinned firmly against the side of the larynx; and when these two things have been accomplished the removal of the tumour with appropriate forceps is easy.

Dr. JAMES F. MCCAW cited a case in his practice in which he encountered the same difficulties mentioned by Dr. Mosher. The growth was a marginal fibroma of the right vocal cord situated near the anterior commissure. After three or four days' training of the larynx by the introduction of instruments, several ineffectual attempts were made to remove the growth by indirect laryngoscopy; at each attempt to grasp the growth it would disappear below the vocal cord. This method was therefore abandoned, and an attempt was made to remove the growth by direct laryngoscopy with Jackson's split spatula. The same difficulties were encountered with this method as with the indirect method on account of the location and position of the tumour. With none of the instruments usually used in this procedure was he able to grasp the growth, and as a last resort he tried the long shank alligator forceps. He was able, by crowding the anterior blade well forward, to finally grasp the tumour and remove it. Tumours situated in this position of the larynx are undoubtedly among the most difficult to remove, and for that reason he was very glad to know Dr. Mosher's method of pinning the growth down with the ordinary bronchoscopic tube. It seemed that this would very much facilitate the removal of such tumours in this locality.

Dr. B. R. SHURLY cited three cases which had recently come under his observation. The first, a fibroma of the anterior commissure, was removed by a specially devised laryngeal snare, with a Jackson spatula, under cocaine. The second was a papilloma, which was removed by specially devised forceps with the beak leading forward. The third case was a patient of Dr. Hickey, who presented herself with a diagnosis of pulmonary tuberculosis. She had coughed for three months. Upon inquiry it was found that she had had two teeth extracted under nitrous oxide two months previously, one of them evidently having been inspired, as the X ray revealed a tooth well down in the bronchus. After considerable difficulty the tooth was removed by bronchoscopy.

Dr. RICHARDSON, in closing the discussion, referring to Dr. Mosher's remarks, agreed that it is always well to be prepared for any emergency, but no grasping forceps which he had ever seen were sufficiently wide to encompass the broad upper extremity of this eraser and hold it firmly enough to allow it to be removed. Each time that an attempt was made to remove the body little pieces of the mass were pulled away.

HEMI-LARYNGECTOMY FOR EPITHELIOMA.

By Dr. T. PASSMORE BERENS.

Patient, a man, aged forty-nine, in robust health, with a history of hoarseness for about five years. Two years previously another laryngologist made a diagnosis of tumour of one of the vocal cords, and advised its removal, but this advice was not followed. During the few months previous to consulting the reader of the paper the

hoarseness increased, until his speaking voice was permanently affected, although his singing voice at times was clear, especially for the higher tones. Personal and family history negative with reference to syphilis, tuberculosis, and cancer. Examination revealed a tumour of the left cord, about the size of a bean, occupying its anterior two thirds, and spreading over its free edge into the chink of the glottis. It did not interfere with the movements of the cord. The growth was removed by intra-laryngeal operation. Microscopic examination showed it to be an epithelioma. After removal it was apparent that the growth had been attached to the upper surface of the cord throughout almost the anterior two thirds. Considering the history of the growth, fully appreciating the favourable conditions in general in the case, and in view of the slow progress of the disease, surgical intervention seemed to offer unusual possibilities of help. It was therefore decided to divide the larynx and then determine to what extent removal of the diseased area should be effected. Accordingly, under ether anaesthesia, hemi-laryngectomy was performed. Examination of the larynx showed the left cord to be much thicker than the right, and palpation revealed thickening of the false cord and of the greater part of the central portion of the mucous membrane covering the left half of the larynx. Owing to this extensive thickening of the mucosa the left half of the larynx and of the cricoid was removed. The epiglottis was well above the indurated area and was not disturbed. The cervical glands were not enlarged and were not removed. Convalescence was unexpectedly rapid. From microscopic examination of the tissues removed it was reported that all the epithelioma had been removed by the intra-laryngeal operation.

The points of interest in this case, apart from the apparently complete recovery of the patient, are : The difficulty in arriving at a correct diagnosis, in spite of the man's age; the long duration of the condition; the surface colour of the growth—greyish, with a slightly pink hue; the mobility of the cord; the apparent lack of induration of the near-by tissues; the absence of the palpable lymphatics in the neck, and the general good health of the patient; the unexpected finding, during the second operation, of thickened tissue in the false cord and ventricle, that could not be seen, or was not observed by the laryngoscope, proving later to be but simple inflammation; the rapid and uneventful convalescence; lack of bleeding into the trachea, from the free use of adrenalin; and the fair volume of voice that has resulted.

Dr. CHARLES W. RICHARDSON cited a case in his practice similar to that reported by Dr. Berens, with the exception that there was more infiltration of the left cord, and that the patient was younger, being only forty years of age. The character of the growth was the same. He had for some time thought when next he had a case of true intrinsic growth of the larynx he would operate by a new method, as suggested by Dr. J. Solis Cohen, viz. thyrotomy, without tracheotomy, with submucous resection of the growth. This was done in the case cited. There was practically no bleeding with the use of cocaine and supra-renal extract. Good exposure was obtained by drawing the wings of the thyroid outward. The perichondrial elevation was very easily accomplished by the introduction of the Killian separator, as is done in the intra-nasal submucous operation. It was then a simple matter to introduce curved scissors and cut out the whole mass. The recovery was even more rapid than in the case reported by Dr. Berens, there being no removal of cartilage, and it was uneventful, without temperature. The healing of the lower portion of the wound took two or three weeks. The man was in perfect health eleven months after the operation, was in active business, his voice was better than that of Dr. Berens' patient, and there was no sign of recurrence. Where there is no infiltration the submucous method for the removal of intrinsic growths is the ideal method.

Dr. NORVAL H. PIERCE had found the history of total extirpation of the larynx in his experience disheartening. Of the eight cases with which he had been identified, all had died within ten days. His experience with partial laryngectomy was somewhat more assuring. The hope of carcinoma of the larynx rests in the early diagnosis, and he doubted whether it was wise for the rank and file of the profession to make a diagnosis by the laryngeal method before laryngo-fissure. He had known of cases which had gone on to hopelessness as a consequence of such work. In patients over forty with a suspicious tumour of the vocal cord he preferred to operate by laryngo-fissure rather than by direct or indirect laryngoscopy. The microscopic diagnosis can be made in the operating room, and if the growth proves to be carcinoma its removal can be best assured by the method of Solis-Cohen, quoted by Dr. Richardson, viz. the sub-perichondrial method. He had performed this operation in several early cases, all of which had got along very well. Chloroform anaesthesia without previous tracheotomy was employed. The speaker asked Dr. Berens what method he used in closing the anterior incision.

Dr. WOLFF FREUDENTHAL said that, as a rule, the total removal of the larynx is quite unfavourable, though Dr. Gluck, of Berlin, presented some very good results at Buda-Pest. In those cases both sides were affected. Too much intra-laryngeal work had been done, and in his opinion as soon as the diagnosis of carcinoma has been made the larynx should be opened. He recommended tracheotomy in such cases, even in well-regulated hospitals, as the danger of oedema is very great.

Dr. WENDELL C. PHILLIPS, referring to the ultimate results of the operation described by Dr. Berens, gave the subsequent history of a case which he had reported twelve years ago. The patient, a man, had what appeared to be a fibroma of the vocal cord. He removed the growth intra-laryngeally, and upon examination it proved to be epithelioma. A partial laryngectomy was then performed. After about one year it was found that a loose flap of mucous membrane, which waved up and down in the larynx, caused considerable difficulty in breathing. This was rounded out under local anaesthesia, and the night following the operation

the patient was seized with sudden œdema, having barely strength enough to ring for assistance. A tracheotomy was quickly performed. He recovered promptly, and had no further trouble until a year and a half ago, when he had a recurrence of the loose membrane in his laryngeal space, which so interfered with his breathing that it was necessary to put in a tracheotomy tube. At present there was apparently a hard tumour in the deep tissues of the neck, which pressed upon the trachea. About three months ago he began to have difficulty in swallowing, and at the present time could not swallow at all. An attempt was made to introduce bougies, but without success. Two months ago a gastrostomy was performed, so that he now breathed through one tube and fed through another.

VINCENT'S ANGINA INVOLVING THE LARYNX EXCLUSIVELY.

BY DR. H. ARROWSMITH.

The purpose of this communication was to put on record a case which seemed unique in the history of the disease. The patient, male, aged twenty-six and a half, presented himself at the author's clinic on August 27, 1909. During the previous week he had experienced a deep-seated sensation of discomfort in the throat, with gradually increasing hoarseness and dyspnœa, which latter was pronounced at the time of admission. Physical examination of the thorax was negative, pulse and temperature normal, respiration decidedly embarrassed. There was slight swelling of the neck externally. Laryngoscopy showed œdematous swelling of the epiglottis, arytenoids, and ventricular bands. His condition was so serious that he was sent to the ward for observation. About twenty-four hours after admission his dyspnœa became so urgent that the house-surgeon was obliged to do a hurried tracheotomy. This entirely relieved the laryngeal symptoms. The tube was removed after four days and the tracheal wound was completely healed by the third week. There was nothing of moment in the laryngoscopic picture beyond a slight tumefaction of the epiglottis and the ventricular bands. His voice had recovered its usual tone and the discomfort and dyspnœa were completely relieved. He was discharged, but returned on October 4, with recurrence of the hoarseness, dyspnœa, and swelling of the soft tissues of the neck. The skin-incision had re-opened and was discharging very foul-smelling pus, which had collected in the peri-tracheal soft parts. Several small abscesses were incised, and a considerable amount of pus liberated. The pus from these suppurating tracts was found to contain immense numbers of fusiform bacilli and spirilla of Vincent. The sputum, owing to a misunderstanding, was not examined at this time. On October 10 his dyspnœa demanded a second

tracheotomy, and smears from the interior of the trachea showed almost a pure culture of the specific germs, as did also the sputum obtained by coughing. A blood-count showed a moderate anæmia. Urinalysis: a trace of albumen, no sugar, indican in excess, a few casts. During the ensuing six weeks frequent examination of the sputum, tracheal secretions, and granulation-tissue from the tracheal wound showed almost pure cultures of the spirillum and fusiform bacillus, at times mixed with pneumococci, staphylococci, and streptococci. As the symptoms showed no amelioration, on November 5 thyrotomy was performed and a Jackson's laryngostomy tube inserted for the purpose of keeping the larynx open for topical applications, and with the hope of averting future deforming cicatrization. When the larynx was split a mass of friable, cheesy exudate was removed, which teemed with the specific germs. Beneath this exudate the mucous membrane was eroded and bled easily, and in spots the bare cartilage could be felt. A thorough anti-syphilitic course of medication was instituted without benefit. A Wassermann test after the Noguchi method gave absolutely negative results. During an illness of the author the laryngostomy tube was removed and the tracheotomy tube re-inserted on November 19. When he again saw the patient the thyrotomy wound had closed down to the tracheal opening. About December 1 patient had almost complete suppression of urine, with decided symptoms of uræmic poisoning. By the middle of December the fusiform bacilli and spirilla had practically disappeared from the sputum and secretions, and cicatricial contraction had produced marked stenosis of the larynx. For more than a month daily attempts were made to dilate the larynx with Schroetter's tubes, but it was never possible to introduce the fourth tube in the ascending scale. The larynx now admits a fair-sized goose-quill, but its structures are thickened and rigid. On account of the condition of the kidneys it was not thought wise to subject the patient to further operative procedure. It would have been interesting to determine whether the primary seat of infection had been within the larynx or trachea, or in the peri-tracheal, areolar tissue.

As a complement to the above case the author reported a second in which the infection with fusiform bacilli and spirilla of Vincent was implanted upon a pre-existing laryngeal tuberclosis.

Dr. NORVAL H. PIERCE had never seen a case such as Dr. Arrowsmith reported. The presence of Vincent's spirillum or the fusiform bacillus in an ulceration of the mucous membrane of the upper air-tract does not mean that the pathological process is due to that organism. In this

connection he cited a case reported by Koenig, of Paris, which was diagnosed Vincent's angina. It went on until perforation occurred, and despite a negative Wassermann, healed up immediately upon the administration of anti-syphilitic medication. He also cited a case which had come under his observation in Chicago. A young man brought his wife in for an opinion, giving no previous history. Upon examination it was found that there was infiltration and ulceration of both posterior pillars and the upper part of the tonsils, rather symmetrical; stiffening, swelling and infiltration of the soft palate, so that the patient had a nasal voice. Examination of the nose revealed posteriorly a pronounced swelling and infiltration, which occluded the view of the inferior meatus. The diagnosis of syphilis was made. Such a possibility was vigorously denied, and the husband then told that the patient had been under treatment for a month for Vincent's angina because at every examination swarms of the fusiform bacilli and of Vincent's spirillum were found. It was finally agreed that anti-syphilitic treatment be instituted; this was done, and after a short time everything healed up, with perforation of the palate and of the anterior pillar on one side. The Wassermann test had been made in this case and was negative. The spirochæte of syphilis had not been looked for. Emphasis was laid upon the great danger of mistaking syphilis for Vincent's angina, the organisms of which, in his opinion, do not cause perforation of the cheek and palate. Undoubted syphilitic lesions may contain these organisms in great numbers. No examination is complete in these cases until a search has been made for the spirochæte in the local ulceration and a Wassermann test made. If such cases have resisted local treatment for weeks it is always good practice to give anti-syphilitic treatment, even though the Wassermann test and the search for spirochæte result negatively.

Dr. TALBOT R. CHAMBERS called attention to the fact that the Wassermann test may be negative when syphilis is present, the accuracy with which the test is made having so much to do with the result. He had had two or three cases similar to those cited by Dr. Pierce.

Dr. NORTON L. WILSON sounded a warning note with reference to the association of some of the cases under consideration with tuberculosis. Tuberculous cases if given iodide of potash do very badly, and one should therefore be very positive in the diagnosis before instituting anti-syphilitic treatment.

Dr. D. BRADEN KYLE agreed with Dr. Pierce. He cited one case among a number previously reported in which the spirillum had been demonstrated, which did not yield to the iodides but which responded readily to mercurial inunctions. This was undoubtedly a case of syphilis though the germ of syphilis was not found. Just what the presence of the spirillum signified he did not know. Ulceration in the membrane which forms on the palate and sometimes along the cheek is rarely found. There is nearly always some swelling in the thyroid region. In the only two cases of true Vincent's angina which he had seen the thyroid gland was swollen and there was cellulitis in the neck.

Dr. ARROWSMITH, in closing the discussion, said anti-syphilitic treatment, as well as the Wassermann test, had been employed in all the cases he had reported. He took issue with the remarks of Dr. Pierce concerning the non-association of the germs with the disease. There is nothing in syphilis that looks like Vincent's angina in the early stage. The exudate is characteristic, as is likewise the appearance of the adjacent parts. The ulceration in Vincent's angina begins a short time after the commencement of the exudate, and looks not at all like that of

syphilis. In the former cases there is at times a tremendous loss of tissue and the formation of a great deal of cicatricial tissue.

LARYNGITIS DOLOROSA.

BY DR. WOLFF FREUDENTHAL.

Laryngitis dolorosa is applied as a symptomatic designation for many affections, all of which have the one symptom in common, viz. attacks of severe pain. Since pain is the only symptom under consideration in the present communication, and since this occurs most often and severely in ulcerative processes of the larynx, the author confined his remarks to tuberculosis, syphilitic, carcinomatous, and diabetic ulcers, most of his attention being devoted to the tuberculous. While ulcerations of the larynx, of whatever origin, may be treated on similar lines, locally, in order to relieve pain, yet there seems to be a difference in regard to certain applications. The local treatment of these cases may be intra-laryngeal or extra-laryngeal. Laryngeal rest has long been recommended by the author in cases with infiltrations of the larynx, treatment of any kind being of little value. If, however, these infiltrations break down and ulcerations appear, then the pain often begins, and the method of treatment is much more difficult. The requirements of any treatment are—(1) to stop the cough, which originates in or near the larynx; (2) to remove the dysphagia; (3) to seek to effect a cure by local applications.

In such cases, following the work of Kranse, the author for years employed lactic acid for the want of something better. He has now entirely discarded it, except after thorough curettage. A new astringent, omorol (Heyden), an albuminate of silver, has a distinct penetrating action, and in some cases is very efficacious. It is not soluble in water, and must be employed as a powder.

When a deeper caustic effect is desired it is best to use the galvano-cautery, as proposed by Ludwig Gruuwald, of Munich. The author employs the galvano-cautery occasionally, and is inclined to recommend it for certain cases, at the same time cautioning against severe cauterisation at one sitting. He cited a case in his own practice in which a very unpleasant œdema followed extensive cauterisation in the larynx.

More important than the application of caustics is the production of analgesia of the larynx by drugs, thus enabling the patient to take solid as well as fluid foods. For this purpose cocaine was formerly employed, but other drugs, notably orthoform, anaesthesia,

propæsin, may be used, the last-named being preferred by the author. Dionin, applied directly to the laryngeal ulcerations, has been recommended but not tried by him.

In cases in which the diseased part cannot be reached, as in a flattened epiglottis, when the ulcer is located on its lower surface, or on the posterior wall of the larynx, or in the trachea, injection of alcohol may be used with benefit, as first suggested by Rudolph Hoffmann, of Munich. He recommends 85 per cent. alcohol, of a temperature of 45° C.—about 111° F. After the subsidence of the initial pain, which may be quite severe, another injection is made. A strong needle should be employed for the injection, the patient being instructed neither to swallow nor to talk until the procedure has been completed. The place where the superior laryngeal nerve penetrates the membrana thyro-hyoidea is located with the finger from the outside, with the patient on his back, and the larynx pushed toward the affected side; the most painful spot can be determined with the finger, and here the injection is made. Three cases of a series of ten or twelve were cited in which this method was employed by the author with advantage. The analgesia thus produced generally lasts from three to eight days.

The third method of treating laryngeal conditions of tuberculous origin is by thyrotomy or laryngotomy, a method which is practically new.

Three cases were cited which he had treated by this method.

From the limited experience with this operation, it may be concluded that while the procedure may be unsuccessful in hopeless cases where it is employed as a last resort; in other instances it will tend to prolong life and open the pathway to final recovery.

Dr. B. R. SHURLY asked if these cases had any pulmonary lesion. The procedure in the larynx is decidedly modified by the presence of pulmonary lesions, some variety of which had existed in practically every case which he had encountered.

Dr. JOHN A. THOMPSON had found monochlorphenol give more relief in advanced tuberculosis than anything he had ever tried. It is used by direct intra-tracheal injection. The preparation made by Merck is soothing, whereas some of the others are irritating.

Dr. ROBERT C. MYLES expressed his personal indebtedness to Dr. Freudenthal for some of the preparations which he had proposed, especially the orthoform and egg combination. This should be rubbed in thoroughly and freely by means of a long, curved, cotton-tipped applicator. In some cases he had seen the pain and swelling entirely relieved by this method.

Dr. HUBERT ARROWSMITH called attention to Dr. Yankauer's dropper to be used in the cases under consideration.

Dr. FREUDENTHAL said, in answer to Dr. Shurly's question, that there

is always some pulmonary lesion present, particularly in very far advanced cases.

AFFECTIONS OF THE EXTERNAL AUDITORY MEATUS.

BY DR. J. E. SHEPPARD.

The material from which the paper was prepared was culled from the histories of 2000 private cases. Of this number 17·5 per cent. of histories referred to the external ear. Nine per cent., or a little more than half, of these were cases in which the cerumen had become pathological—in other words, the wax had become so impacted as to produce symptoms referable to the ear. Of these cases of impacted cerumen, 54·7 per cent. occurred in males, and 45·3 per cent. in females.

Otitis externa circumscripta, or furuncle, was present in thirty-six patients, or 3·6 per cent. of all cases, of which 28·7 per cent. occurred in males, 71·3 per cent. in females.

Eczema was present in thirty-one patients, or 3·1 per cent., of which 43·5 per cent. were in males, 56·5 per cent. in females. Myringitis chronica, properly a sub-group of eczema, furnished five cases, or 0·5 per cent. of all cases, occurring twice in males and three times in females.

There was one case, 0·05 per cent., of aspergillus among the 2000 patients, this being in a female.

Foreign bodies were found in four cases, or 0·4 per cent. of all the cases.

The foregoing conditions, over 90 per cent. of the entire number, were placed in one group because, in the author's opinion, they are all due to improper hygiene.

Of the less usual conditions, exostoses and hyperostoses, four or five cases in each 1000 histories were found. They are sometimes single, sometimes multiple, most often situated at the extremities of the so-called tympanic ring. What seemed to be a true osteoma occurred in one case, or 0·05 per cent. in 2000.

Sebaceous cysts in the canal are of interest, principally because they are often mistaken for furuncle, and when so mistaken are apt to recur, because the treatment indication is to curette and destroy the secreting internal surface of the cyst.

Keratosis obturans, laminated epithelial plug, or otitis externa desquamativa, is likely to be found once or twice in every 1000 cases. It may be mistaken at first for impacted cerumen, requires patience and dexterity for its removal, and should be seen at three

or four months' intervals for at least two years to guard against its recurrence.

Otitis externa hæmorrhagica is occasionally seen, but is usually an accompaniment of a severe middle-ear inflammation, most often of influenzal form.

Occlusion of the canal, both congenital and acquired, is met with sufficiently often to require mention.

Epithelioma of the canal was found in three instances out of 2000 patients. The first case disappeared without treatment. One patient had both ears so affected. The latter case was successfully treated with X-ray. The histories of these two patients were detailed. While in the early stages of epithelioma it may be extremely difficult, or even impossible, to positively differentiate the condition from eczema. When the diagnosis is made, the X-ray, or the use of the curette and acid nitrate of mercury, should, in the author's opinion, be employed before resorting to the knife.

Dr. JAMES F. McKERNON had found eczema of the external auditory meatus in a number of cases of rheumatic or gouty diathesis, and where there is a slight discharge through a small perforation close to the tympanic ring, appearing only when the patient is lying down. The application of cleansing and stimulating solutions, such as bichloride of mercury or a mild solution of formalin, will generally clear up the condition. Many of these eczematous conditions resulting from old perforations can be cleared up in the same way. Exostosis, whether of the external or deeper portions, is generally traceable to rheumatism, gout, or syphilis. He had seen a number of cases in which no history was obtainable other than of former syphilis. As a rule exostoses of the external auditory canal develop very slowly. In the treatment of occlusions of the canal, whether congenital, due to marked perichondritis, to cicatrix following operations for the removal of foreign growths, his results has formerly been very unsatisfactory. He had much more favourable results since employing the flap devised by Dr. Ducloux. The flap is taken from the roof of the canal, brought down and sutured in place, thus forming almost the entire circumference of the canal, a foreign body of some kind being placed in the opening to prevent contraction and to keep the flap in place until cicatrization takes place. At first a solid plug was employed, but he had later used a celluloid tube, which is worn by the patient for months, and had found it much more satisfactory. In the treatment of epithelioma in and around the external auditory meatus he had during the past year employed carbonic acid snow in three cases. In one of these cases Dr. Sondern had made the diagnosis from sections. The primary growth almost entirely healed, but the patient died later of metastasis.

Dr. F. C. ARD said that since opening a perfectly normal mastoid many years ago he had been very careful in his differential diagnosis between mastoiditis and furunculosis of the external auditory canal. A case was recently referred to him that had been treated for ten days by a general practitioner for furunculosis. Three or four furuncles were found

in the canal discharging quite freely, but the pain continued. The speaker watched the case very carefully, and when there was a rather sudden increase in the discharge of pus he decided to open the mastoid. Upon doing so a very extensive destruction of the mastoid bone was found. This would indicate that cases of furunculosis should be watched with great care.

Dr. ROBERT LEVY called attention to the frequent occurrence of otitis externa diffusa, in which there is a small amount of discharge, in cases associated with middle-ear tuberculosis. In these cases mastoiditis may occur in connection with diffuse external inflammation. One finds here a diffuse swelling without circumscribed formation of pus. Ichthyol with glycerine, applied on a small tampon, reduces this swelling in the external canal rapidly. The tuberculous otitis may then be treated with solutions of formalin (1-500 or 1-1000) with much benefit. Recurrent attacks are not infrequently seen.

Dr. EDWARD B. DENCH asked the reader if he had ever seen a case of keratosis obturans without perforation of the membrana tympani. In his own experience perforation had always been present, and he had considered these cases of keratosis obturans as invariably indicating a cholesteatomatous deposit within the middle ear. Regarding the differential diagnosis between a furuncle in the external auditory meatus and a mastoiditis, this differential diagnosis could be made in 99 cases out of 100 without difficulty. In the one hundredth case most men would probably do as Dr. Ard did, and open a healthy mastoid. In the treatment of epithelioma of the external auditory canal, he had had excellent recoveries before the discovery of the X-ray treatment by complete excision of the neoplasm and the removal of the cervical glands. In discussing the methods for enlarging the external auditory meatus, where narrowing had occurred as the result of traumatism, or from other causes, he cited the case of a man who had been thrown from an automobile. In this patient the entrance of the meatus had been so narrowed as only to admit the introduction of a very fine probe. As the result of the fall the inferior wall of the external auditory canal had been fractured so that the bony meatus was narrowed as well. The treatment consisted in making an incision behind the ear, turning the auricle forward, dissecting out the cartilaginous meatus and exposing fully the bony meatus. The bony meatus was then enlarged by means of a gouge, the bone being removed from the inferior and posterior aspects of the bony canal until this channel was restored to practically its normal calibre. A tongue-shaped flap was then cut from the fibro-cartilaginous meatus, a portion of the conchal tissue being included in this flap. The cartilage was removed from the flap and the cutaneous flap sutured upward and backward. A skin-graft was applied to the raw cartilaginous edge and the posterior incision was closed without drainage, the auricle being replaced in its normal position. The result was most satisfactory, the patient recovering with a perfectly patent external auditory meatus and perfect hearing.

Dr. HARRY L. MYERS mentioned two cases which had recently come under his care, in which the thickening of the auricle, so frequent in eczema of the external ear, was extreme, the auricle being nearly twice its original size. These cases cleared up and became normal remarkably rapidly under the daily swabbing of the involved area with peroxide of hydrogen, followed by absolute alcohol, and painting the surface with a 2 per cent. solution of nitrate of silver. In addition to this treatment the patient was instructed to fill the ear twice daily with a 5 per cent.

solution of resorcin in equal parts of alcohol and water. The dry, scaly form had been greatly relieved by a 2 per cent. salicylic ointment.

Dr. HERBERT E. SMYTH said the carbonic acid snow is rendered much colder if dipped into ether before using, as is the practice with the Doctors Mayo.

Dr. SHEPPARD, referring to the cases mentioned by Dr. McKernon, said he had seen cases treated for months for eczema which were in reality cases of chronic middle-ear suppuration. A clear distinction should be drawn between hereditary and acquired occlusion of the canal. The acquired can often be corrected, but the hereditary kind are hard to rectify. He had seen a number of cases of keratosis obturans in which the tympanic membrane was perfectly normal. He had also seen cases in which the canal wall had undergone absorption owing to the pressure of these masses. He did not know the aetiology, but had called the condition "otitis externa exfoliativa."

(*To be continued.*)

INTERNATIONAL CONGRESS OF MEDICINE AT BUDAPEST.

September, 1909.

SECTION OF LARYNGOLOGY AND RHINOLOGY.

DRS. NAVRATIL AND KILLIAN, *Presidents.*

A CONTRIBUTION TOWARDS THE DIAGNOSIS AND TREATMENT OF LARYNGEAL CANCER.

BY SIR FELIX SEMON.

Thirteen out of a total of 246 cases of malignant disease of the larynx seen in thirty-three years were related, in which exceptional diagnostic difficulties were encountered, and in a number of which diagnostic mistakes were made. The cases were as follows:

(1) Malignant disease of the larynx, appearing first in the form of a curious tumefaction of the left vocal cord, which remained stationary for nearly two years before showing its true nature; (2) chronic infective inflammation, simulating malignant disease of the larynx; (3) extravasation of blood into the right cord and below it, simulating malignant disease of the larynx; (4) laryngeal tuberculosis, in which the laryngoscopic appearances left the diagnosis between malignant disease and tuberculosis quite undecided; (5) laryngeal tuberculosis simulating malignant disease, in an old gentleman, aged seventy; (6) tuberculous tumour, simulating malignant disease, in the anterior commissure of the vocal

cords; (7) leucoma of a vocal cord, simulating malignant disease of the larynx; (8) epithelioma of the left ventricle of Morgagni, at first mistaken for papilloma; (9) epithelioma originating in the form of an angioma; (10) papilloma, occupying the whole posterior part of the right vocal cord and the inner aspect of the right arytenoid cartilage in a gentleman, aged sixty, mistaken for malignant disease of the larynx; (11) epithelioma of the larynx appearing in the form of snowy white, sharply pointed outgrowths; (12) granuloma originating in the scar due to removal of an epitheliomatous tumour of the right vocal cord; (13) inflamed papilloma in a gentleman, aged sixty, closely simulating the appearance of an epithelioma of the larynx.

The author concluded by exhorting his younger hearers not to consider the early diagnosis of malignant disease of the larynx as exceedingly difficult. The foregoing cases were very exceptional, and their existence did not impair the value of the standard rules of diagnosis.

THE THERAPEUTICS OF CANCER OF THE LARYNX.

BY DR. CHIARI (Vienna).

Thyrotomy is indicated in cancer of the cords and of the ventricular band without interference with movement. The percentage of cures varies from 50 to 80. For severer cases necessitating laryngectomy the speaker recommended Gluck's method. With reference to numbers and percentages as to the results of operation he called for more publicity and frankness.

THE DIAGNOSIS AND TREATMENT OF CARCINOMA OF THE LARYNX.

BY PROF. GLUCK (Berlin).

A synopsis of the operations on the upper air-passages performed in his clinique was furnished:

(1) Exploratory laryngo-fissure, which holds a position like that of exploratory laparotomy in abdominal surgery.

(2) Tracheostomy and laryngostomy. The latter was combined with the conservative treatment of cicatricial contraction of the larynx by Dupuy's cannulae, which were modified in different ways.

(3) Partial or complete plastic operation on the larynx when provided with a stoma, after the sclerotic scar-tissue was removed by wide excision.

(4) Closure of defects of the anterior wall of the air-passages or of inspiratory retraction by flaps of soft parts, periosteum and bone taken from the sternum.

(5) Transverse resection of the trachea as far as the arytaenoid region (for cicatricial diaphragms, etc.), with subsequent tracheal suture.

(6) Closure of deep tracheo-oesophageal fistula by skin-flaps.

(7) Simple thyrotomy, or complete laryngo-fissure with partial or total exenteration of the larynx, etc., with subsequent total or partial "laryngoplastic."

(8) Partial resection of the larynx.

(9 *a*) Hemi-laryngectomy with laryngoplastic.

(9 *b*) Hemi-laryngectomy with partial resection of the remaining half of the larynx. (According to his experience, not to be advised.)

(10) Complete simple laryngectomy with suture of the tracheal stump to the integument, and immediate suture of the pharyngeal defect and external skin-wound. Final result—circular tracheostomy without a cannula.

(11) Total laryngectomy with resection of more or less of the pharynx.

(12) Total extirpation of the larynx with transverse resection or extirpation of the pharynx.

(13) Extirpation of larynx, pharynx, and cervical œsophagus.

(14) Extension of these operations to include extirpation of glands.

(15) Extension to include resection of the great cervical vessels.

(16) Total œsophago- and pharyngoplastic.

(17) Skin-flap plastic in the region of the great cervical vessels in order to protect them from infection in cases of extensive gland removal.

(18) Complete extirpation of the tongue.

(19) Total extirpation of the tongue with extirpation of the larynx and resection of the pharynx in one sitting.

(20) Various methods of pharyngotomy. As a rule he avoids doing these operations in two acts, *e.g.* prophylactic tracheotomy, and a week later, laryngectomy, since the aseptic course of the healing is prejudiced by the presence of an opening in the air-passages.

(21) Establishment of a pulmonary fistula in stenosis of the bronchi.

With regard to speech, most of the patients wear the artificial

larynx, and endeavour to learn the pharyngeal voice, now and then with amazing success. Prof. Gluck, however, has again resumed his former efforts to give his patients a voice at the disposal of the lungs, either with human tones reproduced with the aid of a gramophone disc, or by means of rubber or metal voices produced from handy and noiseless forms of apparatus.

Demonstration of three patients, including a woman, in whom two and a half years before total extirpation of the larynx, with removal of the epiglottis and part of the pharynx—sinus pyramidalis on both sides—had been performed for tuberculosis of the larynx, of the diffuse hyperplastic ulcerative type, with necrosis of cartilage.

Dr. THOST (Hamburg) said the diagnosis should not rest entirely upon microscopic appearances, as the clinical symptoms were of more importance. In the neighbourhood of carcinoma the mucous membrane became papillomatous. As in the case of sarcoma in the nose, mucous polypi developed—a circumstance which might lead to error. Further, a mixed infection of carcinoma with tubercle, or of syphilis with tubercle, and cancer should not be forgotten. Nitrate of silver as a local application was of diagnostic value; in syphilis it led to improvement, while it made tubercle and cancer worse.

Dr. FINDER (Berlin) remarked that in his opinion there was still a place for the endo-laryngeal removal of cancerous growths in certain very rare and carefully selected cases, one of which he had operated on three years before without any sign of recurrence so far. In another case—that of an old woman—the growth was removed by the endo-laryngeal method, and she remained free from the disease for eighteen years. Now, after so long an interval, the cancerous growth had reappeared. The speaker maintained that this case also should be considered successful. After describing a case similar to that related by Sir Felix Semon, in which granulation-tissue appearing after thyrotomy simulated a rapid recurrence, Dr. Finder went on to draw attention to a group of cases in which there was experienced great diagnostic difficulty, especially in respect to their similarity with perichondritis. The cases he referred to were those in which the cancer was situated under the mucous membrane of the sinus pyriformis, leading to a protrusion inwards of one half of the larynx, which was swollen and fixed during phonation. This diffuse laryngeal swelling did not present the features of a tumour, and unless a microscopic examination was undertaken its true character might remain unsuspected. Even the microscopic examination might be misleading. In a case of his of this character a diagnosis of epithelioma was made, based upon the microscopic appearances of a piece removed for examination. But at the operation the supposed carcinoma turned out to be an atypical epithelial overgrowth due to the presence of an underlying sarcoma.

Dr. RÉTHI (Vienna) related the history of two cases bearing on the question of the diagnosis of laryngeal cancer. In both of the cases there was present a flat papillomatous tuft on the right vocal cord near the arytenoid cartilage, while on the anterior third of the left vocal cord there was another similar growth; the movements of the cords were free

on both sides, albeit that the growth on the right cord was in close proximity to the crico-arytenoid articulation. From the appearance of the growths, the absence of any sign of infiltration, the free movements of the cords, and, above all, from the discrete occurrence of the lesions, separated as they were from one another by normal mucous membrane, no other diagnosis could be made but that of papilloma. But the microscopic examination of the tumours showed that they were cancerous, and the subsequent course of the cases proved that this diagnosis was correct. Thus the discrete occurrence of multiple laryngeal tumours could no longer be looked upon as sufficient reason for excluding the possibility of cancer.

Dr. BREWACK (Charkoff), while recognising the pre-eminence of the more radical extra-laryngeal operations, nevertheless held that endo-laryngeal measures were indicated when the tumour was so circumscribed that it could be easily reached with instruments. Such cases were not so rare as might be supposed; he had come across several in his practice. Laryngotomy was not altogether free from danger, while the endo-laryngeal mode of access, on the other hand, was never followed by any serious accident, and recurrences did not take place any more often than after thyrotomy. It was necessary, of course, to keep the patient under strict supervision and to adopt radical measures if recurrence did take place.

Dr. J. W. GLEITSMANN (New York) referred to a case in which the whole ventricle of Morgagni was distended by a tumour, strikingly white in appearance, which was looked upon for twelve years as a case of pachydermia. Not until the end of that time was the diagnosis of cancer made and the disease successfully removed by laryngectomy. He agreed with Sir Felix Semon in regarding with suspicion these hard white tumours of the larynx.

Dr. HAJEK remarked that the salient point was early diagnosis, and that being so those cases are the most puzzling which assume the appearance of papilloma. This was especially apparent in people over middle age, as Sir Felix Semon was the first to point out. Everyone had had experience of those cases in which pieces of tissue removed from the larynx showed no sign of malignancy. But it was even more unpleasant, as in two of his cases, to find that, in spite of the positive microscopic findings, the future course of the disease proved that there was no cancer.

Dr. BAUMGARTEN (Budapest) although he homologated Dr. Chiari's dictum that endo-laryngeal measures should only be employed when the diagnosis was not quite certain, nevertheless thought that small circumscribed tumours in people over seventy years of age formed an exception to the rule, since he had found that at this time of life laryngeal cancer was of a mild type as Dr. Finder's case had shown. He himself had operated in this way upon a similar case.

Dr. GROSSMANN (Vienna) narrated a case from Schrötter's clinique in which repeated microscopic examination showed the disease to be cancer. Operation was refused. A year later it had undergone so much improvement that no trace of the original disease could be detected. He mentioned another case in which, after hemi-laryngectomy had been performed by Billroth, that surgeon, in spite of the repeated positive microscopic findings before operation, declared, as he held the specimen in his hand, that he did not believe, after all, that it was cancer. It was little to be wondered at that errors should sometimes arise when a surgeon of Billroth's experience had at times to confess that he had been mistaken.

Notwithstanding all that, investigation by the microscope remained our most reliable guide, but we should be careful not to be satisfied with one examination only. We should also appeal from the less to the more skilful histologists.

Dr. MORELLI (Budapest) recalled a case in which after removal of multiple papillomata by means of the thermo-cautery cancerous degeneration set in with such rapidity that a year later not only the larynx but also the integument around the tracheotomy tube was the seat of disease. In yet another case a quite small cancerous growth was to all appearances removed by means of a blunt instrument (? endo-laryngeally). Destruction of the tissues ensued so rapidly that tracheotomy had to be performed three weeks after for impending suffocation. He entirely agreed with Hajek that papillomata in people over the age of thirty-five should be operated on with great care, and that sharp instruments should be used in preference to crunching instruments.

Dr. CHIARI, in reply, emphasised the importance of histological examination in the diagnosis of laryngeal cancer. Although not absolutely correct in all cases it is nevertheless of the greatest importance. Among other advantages it protects us from subsequent reproaches on the part of our patients. It was, he went on to say, a circumstance of the greatest significance that cancer has very varying clinical characters which do not always coincide with the histological formation. With reference to the influence of the structure of a laryngeal tumour upon prognosis, Navratil had made some communications of considerable value. Regarding treatment, he was of opinion that nothing else than a surgical operation could be relied upon for the radical extirpation of cancer. In conclusion, he besought Gluck, to publish the results of his operation for cancer of the larynx.

SYPHILIS AND MALIGNANT TUMOURS OF THE THROAT.

BY DR. MASSEI (Naples).

Eight cases of syphilis which terminated in the formation of cancer were narrated, in which the lesions were situated on the palate, tongue, or larynx. The likelihood of diagnostic error was minimised, and there seemed to be no doubt that the syphilitic was transformed into the malignant disease. Among other conclusions arrived at by the author there may be mentioned that in which he recommends a continuance of anti-syphilitic treatment as a prophylactic, even during the period of latency.

HYPER-KERATOSIS OF THE LARYNX AND ITS CLINICAL SIGNIFICANCE.

BY DR. ZWILLINGER.

The following are the opinions held by the author as a result of his clinical and anatomical studies:

(1) So-called pachydermia laryngis and leuko-keratosis of the mucous membranes are identical in their nature.

(2) The formation of a strong horny layer is the most prominent symptom of the disease-process.

THE RESULTS OF THE DIRECT EXAMINATION OF THE DEEPER AIR-PASSAGES.

BY DR. VON EICKEN.

After running over the history of the direct examination of the air-passages, the speaker went on to say that the literature presented numerous instances in which the presence of aspirated foreign bodies was confused with other ailments. Such a mistake is usually due to imperfect attention to the history of the case or to an incomplete examination. But it is not uncommon for us to find that not only do the laryngeal mirror and the stethoscope fail to guide us aright, but even the X-ray picture may not give satisfactory information, more especially in the case of foreign bodies of moderate density like bones, shirt-studs, etc.; even metal substances, also, sometimes fail to cast a shadow. In all suspicious cases, therefore, direct examination is imperative. The question as to whether the direct examination should take place through the natural channels or through a tracheotomy wound is one that is difficult to answer. The possibility of the foreign body becoming impacted in the sub-glottic or glottic space during extraction must be considered. The skill and experience of the operator play an important part in the decision. In the case of soft and friable bodies like beans in children tracheotomy should always be performed as the first step. The prognosis depends upon the age of the patient, the nature of the foreign body, and the duration of its lodgment in the passages.

Dr. KAHLER (Vienna) reported the experience of Chiari's clinique. Ninety-one cases of foreign body in the œsophagus were met with, in eighty-three of which extraction was successful. In eight cases the foreign body slipped into the stomach. In no case was œsophagotomy required. Sixteen cases of foreign bodies in the trachea and bronchi were observed, in only four of which tracheotomy was necessary. Death followed œsophagoscopy in two cases, and in one of them the fatality must be ascribed to the examination, for the œsophagus was perforated probably in the act of introducing the tube. Bronchoscopy proved extremely useful in internal medicine in the diagnosis of aneurysm, mediastinal tumour, and syphilitic affections. By means of this method, also, the indications for bronchotomy were made clear in three cases. In one of these the surgeon's task was facilitated by the introduction of a bronchoscopic cannula during the operation, an experience which bore out Killian's forecast that this method would prove to be of great use in certain surgical manipulations.

Dr. SCHNEIDER (Moscow) in less than two years had removed twenty-five foreign bodies by means of the bronchoscope, and in all but one the removal was effected at the first sitting. He had had three deaths, none of which could be blamed upon the examination. In 80 per cent. the foreign body was the seed of the sun-flower, a dangerous substance on account of its hard husk, its friability, and its tendency to swell. Since the introduction of bronchoscopy the mortality of these cases had fallen from between 25 and 40 per cent. to 12 per cent.

Dr. PAUNZ (Budapest) reported the results of bronchoscopy in the Stephanie Children's Hospital at Budapest. Fifteen cases were treated. In three the obstruction was due to caseous peri-bronchial glands. In two cases the examination was negative, in one case the foreign body was found *post mortem*. In one case the foreign body was caught in the larynx. Extraction was successful in nine out of eleven cases. The recoveries were equivalent to 66 per cent. Fatalities were most common with caseating bronchial glands, and with friable organic foreign bodies in which multiple aspiration took place.

Dr. DEL RIO (Santiago de Chile) reported fourteen cases under his observation, in twelve of which the foreign body was successfully removed and the patients recovered.

THE SOFT PALATE AND ITS RELATIONS TO THE NERVOUS SYSTEM.

By Dr. RÉTHI (Vienna).

The speaker described experiments and dissections which he had undertaken, and which showed that the motor innervation of the soft palate was effected through the vagus and not through the facial.

With regard to the secretory functions, the innervation is shared by the facial and the sympathetic. The secretion, which results from stimulation of the facial, is richer in fatty matters than that following stimulation of the sympathetic. The fibres of the facial, which earlier anatomists traced through the great superficial petrosal nerve to the palate and looked upon as motor, are thus shown to be secretory nerves.

THE SURGICAL TREATMENT OF LARYNGO-TRACHEAL STENOSIS.

By Drs. SARGNON and BARLATIER.

The paper consisted in a general consideration of the methods of treating laryngo-tracheal stenosis, especially with reference to subglottic direct tracheoscopy, intubation, and internal dilatation by means of indiarubber. Of the open methods attention was especially paid to tracheo-laryngostomy, particularly with regard to the cure of cicatricial stenosis and recurrent papillomata. Sixteen cases under their own care were reported. The result as regards

breathing was good, while phonation had improved since the vocal cords had re-formed.

Indications and Results.—The procedure is recommended (1) in external laryngo-tracheal stenosis, (2) in superior laryngeal and tracheal stenosis, and (3) in diseases of the trachea.

External laryngo-tracheal stenoses are manifold. Of particular importance is compression of the air-way by enlarged thyroid or thymus gland. Laryngostomy is applicable to recurrent papilloma when attempts to remove the growths in other ways fail or when they recur.

(To be continued.)

Abstracts.

ŒSOPHAGUS.

Tanturri, Dr. D. (Naples).—*Two Cases of Œsophageal Spasm Diagnosed and Cured by Œsophagoscopy.* "Archiv. Ital. di Laring.," 1909, p. 160.

The author describes two cases of men suffering from marked dysphagia. Œsophagoscopy showed no mechanical or organic obstruction; the use of a medium-sized Killian's tube followed by bougies for a few days appears to have effected a cure. *James Donelan.*

Strazza, Prof. G. (Genoa).—*Impacted Bone that could not be Removed by Œsophagoscopy.* "Archiv. Ital. di Laring.," Naples, July, 1910, p. 97.

The author reports the case of a woman, aged thirty-five, in whose œsophagus a large cubical piece of bone had become impacted at 18 or 19 cm. from the dental arch. Œsophagoscopy was easily carried out, but though the bone was several times firmly caught in forceps, it could not be extracted without grave danger of laceration, nor could it be forced downwards. Attempts were made on two occasions, but had to be abandoned because of exhaustion of the patient, overheating of the tube, and also, on the second occasion, an abundant hæmorrhage. External operation under chloroform was then performed. Guided by v. Hacker's minimal measurements in females (22 to 27 cm.), it was hoped the incision close to the clavicle would lead almost directly to the foreign body impacted at 19 cm. The operator was surprised to find it some 8 cm. lower, "fixed chiefly to the left side and covered with a soft mass." On attempting to insinuate the finger between the œsophagus and the bone, the latter was suddenly set free and passed into the stomach. Owing to an oversight it was not looked for in the evacuations. The patient made a good recovery. The author gives a short account of a very similar case, in which a bone could not be extracted by œsophagoscopy, but was easily forced into the stomach. He considers that, notwithstanding the large mortality (20 per cent. according to Cohn and others) and "the increasing number of *virtuosi* in œsophagoscopy," external œsophagostomy will always be indicated in a limited number of

cases in which extraction by the natural passage proves impossible. He suggests that the statistics of the external operation are too pessimistic, as they must include many cases in which the operation was performed in the presence of grave œsophageal and mediastinal complications, or as a last resource after repeated failures to extract by means of œsophagoscopy. The author warns against being too strictly guided by the œsophageal measurements given in various tables. In this case there was apparently a discrepancy of 8 cm. between the common site of impaction (aorto-tracheal constriction) where the body was found and the minimal distance of this point in women, according to v. Hacker, from the dental arch. Prof. Strazza attributes the discrepancy to v. Hacker's figures being based on the measurements of the taller women of the north and not including a sufficient proportion of women of short stature, such as Italians.

James Donelan.

Guisez, J.—*Further Cases of Tuberculosis of the Œsophagus.* "Archives Internat. de Laryngol., etc.," March-April, 1910, p. 406.

In the cases now reported the symptom which attracted notice was severe pain on swallowing, giving rise to suspicions of laryngeal tuberculosis in one case and of malignant disease of the œsophagus in another. Œsophagoscopy, however, cleared up the diagnosis by revealing the presence of tuberculous ulcers in the upper part of the gullet, the superior constriction of which was in a state of spasmodic contraction. In two of the cases the ulcers were cured after several applications of lactic acid.

As a result of present and past experience the author distinguishes three varieties of tuberculous disease of the œsophagus.

(1) Superficial ulceration with severe pain on swallowing and emaciation from inability to take food. In such cases examination by the endoscope must be carried out with great care.

(2) Tuberculosis of the œsophagus "due to propagation." In this form the disease is situated in the tracheo-bronchial region and is due to extension of tuberculosis from adjoining structures. The œsophageal lumen is seen to be encroached upon by an irregular or lop-sided infiltration of the mucosa, which is sometimes stiff and hard, sometimes cedematous and translucent.

(3) In sclerotic tuberculosis—the rarest form—there may be some obstruction to swallowing, but there is no pain. On examination the narrowing of the passage is seen to be occasioned by concentric stenosis from infiltration, which on probing is felt to be tough and cicatricial.

In the "propagated" and sclerotic types the diagnosis may be doubtful for a time as the appearances presented resemble those of simple or syphilitic cicatricial contraction. Cancer, however, can be excluded because the infiltration is more extensive in malignant disease, the ulceration is deeper, and there is a greater tendency to hæmorrhage. Moreover, microscopic examination of a piece of the diseased tissue will generally prevent a mistake being made.

The prognosis of tuberculosis of the œsophagus is not good. In some cases, however, especially of the sclerotic type, the application of lactic acid followed after a time by cautious dilatation of the constriction will bring about a cure.

Dan McKenzie.

PHARYNX.

Whillis, Samuel S., M.D., and Pybus, Frederick C., F.R.C.S. (Newcastle-on-Tyne).—*The Enucleation of Tonsils with the Guillotine.* "The Lancet," September 17, 1910.

The writers advocate the complete enucleation of tonsils, and state their ability to accomplish this completely along with the capsule, by means of the guillotine, in 42 per cent. of cases, in the remaining cases the entire tonsil with capsule being removed in one or more pieces. The special point in their method of examination seems to be pressure with the tip of the left forefinger on the outer part of the anterior pillar so as to project the tonsil into the loop of the guillotine. In the description of the tonsil they point out that the orifices of the lacunæ constitute their narrowest part, so that there is no readiness of discharge should the lacunæ be filled with pus or caseous material. *Dundas Grant.*

Ingersol.—*The Care of Children after an Operation upon the Tonsils and Adenoid Tissue.* "The Cleveland Med. Journ.," April, 1910.

The anatomical peculiarities of the child's naso-pharynx are pointed out. Attention to the following points is advised after operation: (1) Bed for two days; (2) teaspoonful doses of cold water every five minutes after operation; (3) presuming operation done in afternoon, no food until following day; (4) if the weather is favourable, fresh air on the third day; (5) if otalgia occur, hot applications or ice-bags to the ears. Gargles and sprays are prohibited. *Macleod Yearsley.*

Gilpatrick, H. H.—*Suture of the Faucial Pillars for Hæmorrhage following Tonsillectomy.* "Boston Med. and Surg. Journ.," July 21, 1910.

The author is convinced that firm and complete approximation of the faucial pillars by suture is the most efficient means of controlling bleeding after tonsillectomy. He gives details of his method. The pillars must be sewn from below upwards, and the sutures are best secured by means of perforated shot. *Macleod Yearsley.*

Packard, F. R. (Philadelphia).—*A Fatality Following the Removal of Tonsils and an Adenoid Growth.* "Amer. Journ. Med. Sci.," September, 1910.

The author believes that if the general practitioner and the public were aware of the many unreported deaths which occur in connection with the removal of tonsils and adenoids, the almost universal opinion as to the comparative insignificance of the operation would be considerably modified. He considers that all these operations should be done in hospital, but not infrequently finds it difficult to persuade the patient's family and doctor to take the same view.

As to the method of operating, he considers the consensus of opinion to be now so strongly in favour of complete ablation of the tonsils that a competent laryngologist will very seldom perform the less complete operation. Ether is to be regarded as the safest general anæsthetic in these cases, and may be preceded by ethyl chloride.

The fatal case reported was that of a little girl, aged three and a half, with enlarged tonsils and a considerable mass of adenoid, but otherwise apparently healthy. The anæsthetic was ethyl chloride followed

by ether given by the drop method, a metal mouthpiece being used. The operation passed off as usual, but about five hours later the colour became rather poor and the pulse and respiration rapid. Two hours after this slight retching occurred and respiration ceased. Tracheotomy was performed, but the trachea contained no blood or vomitus, and death took place. No autopsy was obtainable, but the author regards it as practically certain that the fatal result was due to status lymphaticus.

Thomas Guthrie.

Massei, F. (Naples).—*Syphilis and Malignant Tumours of the Throat*. "Archiv. Ital. di Laring.," Naples, October, 1909.

The author reviews the history of the relation of cancer to syphilis, and of the advances made in our pathological knowledge of this subject. The paper is illustrated by full notes of a number of cases in which syphilitic lesions became the site of cancerous growths. The author justly lays stress on the value of a careful search for the *Treponema pallidum* in accessible regions, as being less difficult to carry out and more certain in its results than the serum diagnosis of Wassermann.

James Donelan.

Hurd, Lee M., and Wright, J.—*The Clinical Diagnosis of Tuberculosis of the Tonsils*. "New York Med. Record," June 26, 1909.

Tuberculous tonsils are usually pale; their crypts contain cheesy detritus; the edge of the anterior palatal fold is reddened and the neighbouring lymphatic glands are hard and swollen. The authors plead that we should not be satisfied in tuberculosis of the lymphatic glands with the removal of the glands alone, but that we should also extirpate the tonsils.

In the cases of tuberculosis of the cervical lymphatic glands reported in the paper nine out of twelve tonsils proved to be tuberculous.

Dan McKenzie.

De Colo, Dr. F. (Pisa).—*Epithelial Pearls of the Vault of the Palate in Relation to the Aetiology of Tumours of that Region (Illustrated)*. "Archiv Ital. di Laring.," October, 1909, p. 151.

The author contributes a useful summary of the modern literature of the development of tumours from isolated epithelial tissue which has become included especially in the vault of the palate. The article is too long and detailed for a useful abstract. The author studies chiefly the epithelial pearls formed in the centre of the palate beneath the septum, and the lateral ones in relation to the intermaxillary lamina. These are, he claims, worthy of much greater consideration, since they may persist and form a starting-point for neoplasms.

James Donelan.

NOSE.

Scheier, Max (Berlin).—*On the Occurrence of Teeth in the Nasal Cavities*. "Archiv. für Laryngol.," vol. xxiii, Part III.

The author records a case of a man, aged forty, who came under treatment for nasal obstruction due to polypus in right nostril, and in whom the lower meatus was seen to be narrowed by a smooth, hard body projecting from the floor, which was evidently the crown of a tooth. An

X-ray photograph confirmed this view, and showed it to be most probably an inverted median incisor.

He also describes three anatomical preparations, and gives X-ray photographs showing—(1) an inverted right median incisor projecting into left nasal passage; (2) alveolus of right median incisor empty, inverted tooth in alveolar process just under nasal spine; (3) left canine not projecting from alveolus, while its root fills entrance to lower meatus on same side.

The developmental causes of this condition are: (1) Inversion of tooth-germ causing tooth to grow upwards into nose instead of downwards; (2) supernumerary teeth which grow into the nasal passages either through misplacement of the tooth-germ or because there is no room for them to grow downwards; (3) misplacement of the premaxillary bone as in hare-lip and cleft palate. Other causes are persistence of milk teeth, hereditary syphilis, and injury to upper jaw. Hansemann has recorded the absence of the upper right lateral incisor through five generations. In the three generations known to him X rays showed the missing tooth to be embedded in the upper jaw.

As a rule there are no symptoms in these cases, and the misplaced tooth is discovered accidentally, but in some, pain and ill-smelling discharge, severe headache, and even epileptiform convulsions have resulted.

Middlemass Hunt.

Oliver, A. Lothrop.—*The Nasal Septum; Important Points in Anatomy and Submucous Resection.* "Boston Med. and Surg. Journ.," July 28, 1910.

The author insists upon the necessity of an accurate knowledge of the finer points of the anatomy of the septum to simplify the technique of the submucous resection. The thickened suture between the quadrilateral cartilage and the vomer should always be resected. A useful, practical paper.

MacLeod Yearsley.

Glas, Emil.—*On the Indications and Operation for Deflection of the Nasal Septum.* "Monats. f. Ohrenh.," Year 44, No. 5.

Based on the experience of 870 operations performed during the last six years on the nasal septum. The author commences by discussing the main conditions which give rise to the main reason for interference in these cases and the manner in which they should be approached, the chief reason, of course, being some form and degree of nasal stenosis. Hypertrophy of the turbinates he would recommend should be dealt with first, and after awaiting the result so obtained for some weeks, attention should then be directed towards the septum, if required. This advice he would apply in respect of elderly and weak patients, but in the case of young, strong adults the septum and turbinates may be treated at the same sitting. He would warn, however, against the consequences of post-operative rhinitis in dealing with nasal stenosis by stages which sometimes lead to adhesions or scars in connection with the septal mucous membrane, making any subsequent operation very difficult, and sometimes giving rise to an irritable condition which every manipulative interference only aggravates, all of which possibilities should be taken into consideration with the two methods of procedure above mentioned.

Apart from stenosis, the indications for resection he divides into three groups: (1) Cases of asthma; (2) Cases of ozæna; (3) cases of frontal or ethmoidal sinusitis. As regards the first group, unfortunately

no definite conditions exist by which the patient can be assured that the cause of his disability is actually situated in his nose and that treatment of the same will certainly afford relief, but the author would recommend that structural irregularities should be corrected with this end in view, and would apparently suggest that the septum should be resected even in cases where no deformity exists on the off-chance of some relief being obtained—advice which lends itself to obvious criticism.

Any good result which may be looked for in cases of ozæna will probably occur where the condition is in part, at all events, due to a very marked deviation, and where the operation may be expected to bring about cessation of the chronic catarrh on the contracted side, and enable the other side to be more readily cleansed by reason of its calibre being reduced, for which explanation Glas quotes the paper read by Mermoud at the International Laryngological Congress of 1909.

With reference to cases of frontal or ethmoidal sinusitis in this respect, the author has been able to relieve the symptoms to which this condition gives rise, in some instances, by a resection operation, when a large deviation was found in the neighbourhood of the anterior end of the middle turbinals, and thus a free exit to the secretion was afforded.

As regards the operation itself, he uses some of various surgeons' patterns of instruments, but seems to lay especial stress on Shurly's speculum.

The initial incision in the mucous membrane he considers should always be made down to the floor of the nose. That this is not practised by some is the cause of difficulties later on in the operation. Rents in the mucous membrane which may lead to perforations are attributable to various causes. They may be due to the failure in introducing the elevator beneath the perichondrium, and instead, endeavouring to effect a separation between this structure and the mucous membrane, either associated or not with a rent in the mucous membrane of the concave side. This adverse result practice and care alone will prevent, but considerable help will be gained by a thorough digital examination of both nostrils by way of estimating the thickness of the septum previous to commencing the operation. Rents in the mucous membrane in the subsequent course of the operation are not necessarily followed by a perforation if the mucous membrane of the opposite side is intact. With these and other more or less well-recognised principles, Glas concludes by stating that he has never seen any dangerous complications ensue, and lays great stress on a final thorough toilet of the area of operation under the effect of a further application of adrenalin, and lays down as a general principle the exercise of greater care and delicacy the further in and higher up one has to operate.

Alex. R. Tweedie.

EAR.

Neumann, H., and Ruttin, E. (Vienna).—*The Aetiology of Acute Otitis.* "Arch. f. Ohrenheilk.," Bd. lxxix, Heft 1 and 2, p. 1.

This interesting article deals principally with the action of the different infective bacteria in respect to the complications of acute middle-ear suppuration. The findings obtained are briefly as follows: The encapsuled cocci, including the *Streptococcus mucosus*, were frequently found to lead to mastoid abscess and intra-cranial disease. On the other

hand, the *Staphylococcus pyogenes aureus*, hitherto regarded as a virulent organism, proved itself to be comparatively innocuous.

As regards the mode of onset of mastoiditis in the course of an acute otitis, the authors noted a distinct difference between the two groups of cocci—encapsuled and non-encapsuled. When the infective organism is a non-encapsuled coccus the signs of mastoid inflammation follow close upon the heels of the middle-ear trouble. When the infection is due to a member of the encapsuled group, on the other hand, there is a quiet interval free from symptoms between the attack of otitis and that of mastoiditis.

The authors devote considerable space to the part played by the *Streptococcus mucosus*. Otitis due to this organism manifests but little inclination to get well spontaneously, and after the tympanic inflammation has subsided, mastoid disease frequently sets in. Those cases, formerly looked upon as cases of primary mastoiditis, are in reality cases of latent *mucosus* infection from an antecedent otitis. The course of events is as follows: The tympanic inflammation subsides or passes into a state of suspension as early as the first or second week, leaving behind, however, considerable disturbance of hearing and continual tinnitus. The membrane appears as it does in moist catarrh, that is to say, it is dull, lustreless, and "humid" red in colour; the details, though still recognisable, have lost their sharpness, and the light reflex is badly defined. There is no pain, or at the most only a little tenderness on pressure over the mastoid. If paracentesis is performed a mucous or muco-purulent secretion is liberated. These obscure symptoms persist unchanged until the advancing destruction of bone attracts notice, either by threatening life or by leading to the formation of mastoid abscess. Among the authors' cases of "*mucosus*" otitis were two of extra-dural abscess, one of meningitis, one of brain abscess, and five of Bezold's abscess, and all of them were distinguished by a striking contrast between the mildness of the symptoms and the severity of the disease. During the stage of the middle-ear inflammation the symptoms may be so trivial as to escape notice entirely, and the first overt event may be the sudden appearance of some intra-cranial complication. It is only, indeed, by close cross-questioning that we discover that weeks or months before the appearance of the severe disease the patient had felt some trifling pains in the ear, lasting but a few days and not accompanied by any discharge.

Of the illustrative case-records of *mucosus* otitis narrated by the authors this is the most striking:

A female, aged fourteen, was admitted to hospital unconscious, and with clear signs of meningitis. According to her father, a year previously some slight pricking in the ears had been observed, and this was followed by deafness. A month before admission the pains had again been noticed. There never had been any discharge. The left tympanic membrane, on inspection, was seen to be somewhat indrawn, translucent, and looked as it does in secretory catarrh. Above the auricle there was a fluctuating oedematous area. Lumbar puncture revealed *Streptococcus mucosus* in pure culture in the cerebro-spinal fluid. Operation immediate. The interior of the mastoid was normal, but one or two cells at the lower border of the squamous portion contained muco-pus. The above-mentioned oedematous area corresponded to a small thrombosed vein in the bone. The dura of the temporo-sphenoidal lobe was exposed and found to be covered with granulations. The upper surface of the tegmen was normal. The membranes were adherent to each other and to the underlying cerebrum. On puncturing the brain with a knife a

large temporo-sphenoidal abscess was broached, evacuated, and drained. Death five days later from meningitis.

Post-mortem.—Basal and spinal meningitis; pus from abscess and meninges contained *Streptococcus mucosus*.

With regard to the action of the other pyogenic organisms one or two interesting points are mentioned. Otitis from the *Staphylococcus pyogenes albus* was found to resemble myringitis in respect of its being accompanied with vesicles on the membrane (in true myringitis the vesicular fluid is sterile).

The *Bacillus coli communis* was found three times, and two of the three cases were traumatic in origin.

Dan McKenzie.

Maschke.—*Routine Otoscopy in the Febrile Affections of Infancy and Childhood*. "The Cleveland Med. Journ.," June, 1910.

The author considers the frequency and importance of otitis media in infancy and early childhood, and goes briefly into the literature; cites eight cases showing the importance of examining the ear in all doubtful cases of febrile affection, and urges the grave necessity of routine otoscopy in order to save future deafness, mastoiditis, meningitis, etc.

Macleod Yearsley.

Luc, H.—*Thrombo-phlebitis of the Jugular Vein, and Diffuse Suppurative Meningitis, secondary to an Unrecognised Labyrinthitis; Cranial Autopsy*. "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," January, 1910.

A young woman, of feeble constitution, had suffered for several years from chronic suppuration of the left ear. Her father died of tuberculosis. An aural examination showed that the membrana tympani had been totally destroyed, but the ossicles were intact. After several months' treatment, without improvement in the discharge and fœtor, ossiculectomy was performed, followed two years later by a radical operation. Ten days subsequently pus was noticed issuing from the neighbourhood of the aditus, and two days afterwards there was complete facial paralysis on the left side. Thinking that these phenomena might have arisen from pus pent up, where adhesions had formed between the upper part of the facial spur and the tegmen, these parts were curetted; as a result the fœtor disappeared, but suppuration persisted. Twenty days after the appearance of facial paralysis high fever set in, accompanied by vomiting. The next day the parts were again explored. A focus of pus was discovered, having its seat in what was supposed to be a group of peri-facial cells; at the same sitting the sigmoid sinus was explored by incision; there was no clot present, but blood flowed almost exclusively from the upper end of the vessel, from which it was inferred that there was a thrombus lower down. The temperature continuing, it was decided two days afterwards to open the jugular bulb. A septic clot was discovered there, extending as low down as the thyro-linguo-facial trunk. The whole length of the infected vessel was opened and cleaned. The fever persisted, but with abated oscillations, without rigors or indications of metastases. Death ensued at the end of a week. The autopsy revealed a diffuse suppurative lepto-meningitis, involving the convexity as well as the base of the brain on both sides. No cerebral or cerebellar abscess. The superior, inferior petrosal and cavernous sinuses were normal. There was no adhesion on perforation of the dura mater covering the petrosal bone. Examination of the tympanum showed that the little purulent bony cavity,

taken at the second operation to be the result of broken-down cells about the Fallopian canal, really arose from destruction of the semi-circular canals. The round and oval windows had been thrown into one, and the purulent cavity observed extended into the cochlea. The facial nerve had been pathologically destroyed before the cavity was opened. The hiatus Fallopii was enlarged by rarefying osteitis. It therefore seemed probable that suppuration of the labyrinth had extended to the aqueductus Fallopii, and that meningeal infection took place at the hiatus Fallopii.

In commenting upon this case, the author remarks on the value of opening and disinfecting the sinus and vein, in the way Grunert has suggested; in this instance it was the means of averting the first menace to the patient's life. With regard to the labyrinthitis, the focus whence the meningitis arose, the clinical history did not afford any information in the way of vertigo or nystagmus by which its presence might be suspected; but such a condition of things is by no means uncommon, a methodical examination of the labyrinth being necessary for its discovery. Had Bárány's test been applied on the first appearance of facial paralysis labyrinthitis might have been diagnosed, and a much earlier intervention practised, possibly preventing extension of infection to the meninges. In conclusion, the author considers that labyrinthitis should always be looked for in every case of otorrhœa, and particularly prior to performing the radical mastoid operation.

H. Clayton Fox.

Mayer, Otto.—*Researches on the Pathogenesis of Congenital Syphilitic Deafness.* "Arch. f. Ohrenheilk.," Bd. lxxvii, Heft 3 and 4, p. 189.

The author submitted to microscopic examination the meninges and temporal bones of eleven children who were the subjects of congenital syphilis, and, although most of the patients died too young to permit of a clinical examination of their hearing-powers, the investigation supplies us with some valuable suggestions as to the probable pathology of syphilitic nerve-deafness.

The following is a summary of the material and findings:

The ages at death extended from ten minutes to seventeen months; no stillborn children were examined. In all the cause of death was directly or indirectly due to syphilis.

In nine of the eleven cases pus was found in the tympanic cavity, a circumstance which subsequent examination proved to be devoid of any significance.

In ten chronic inflammatory changes were evident in the leptomeninges. Only in one case were the contents of the internal auditory meatus found to be quite healthy. Six cases showed signs of inflammation in the labyrinth, and in many the soft structures of the cochlea had undergone degeneration.

In most there was lymphocytic infiltration of the connective tissue of the acoustic nerve-trunk in the internal meatus, and this was also observed in its branches, especially in the cochlear division just at its entrance into the cochlea. A similar lymphocytic invasion of the pial sheath of the nerve-trunk and its fibres was also observed. In addition to the lymphocytes, Mayer was able to demonstrate the presence of cells three or four times larger than lymphocytes, possessing round nuclei, situated eccentrically.

The round-cell infiltration could be traced along the nerve-fibres from the internal meatus into the ganglion spirale, the neurons of which had

undergone degeneration. This change in the ganglion was most marked towards the base of the cochlea.

Inside the cochlea the endolymph was at times thickened and turbid, but in no case were cells observed in the fluid. In some instances the organ of Corti had undergone degeneration, especially in its lower spiral, the sense-epithelium being quite destroyed in this neighbourhood. The difference thus manifested in the severity of the disease as it affected the base and the apex of the organ proved that the changes were not the result of putrefaction.

That these inflammatory and degenerative processes were due to an extension of disease from the meninges outwards was proved by two facts: first, the lymphocytic infiltration was most marked in the neighbourhood of the stomata which connect the peri-lymphatic spaces of the cochlea with the lymphatic channels surrounding the meningeal blood-vessels; and second, it was also very marked at the base where the aqueductus cochleæ opens into the labyrinth.

The pia arachnoid of the brain showed similar alterations. And although the presence of spirochaetes was not demonstrated the author has no hesitation in calling the process syphilitic, since Tobler and Ranke showed by examining the cerebro-spinal fluid of syphilitic patients that they are frequently the subjects of latent chronic meningitis. Thus Mayer concludes that syphilitic deafness is probably due to an extension of this meningitic process along the acoustic nerve, whereby an interstitial neuritis and chronic labyrinthitis, with secondary degeneration of the nerve and epithelial elements, are induced. His views, he holds, are supported by the work of Kretschmer, who found lymphocytosis of the cerebro-spinal fluid in patients suffering from syphilitic deafness. He thus finds himself compelled to adopt a position opposed to that of Baratoux, who referred syphilitic deafness to disease of the blood-vessels and hæmorrhage into the labyrinth. The investigations of Baratoux were carried out upon stillborn children, and the hæmorrhages in the labyrinth observed by him were probably asphyxial in origin. Further, the clinical history of syphilitic deafness, though it may be of short duration, is not characterised by the fulminating events of the Mènière syndrome—a point which militates against the acceptance of the theory of hæmorrhage into the labyrinth as the cause of syphilitic deafness.

Mayer's article, which is illustrated, should be read in its entirety.

Dan McKenzie.

Biggs, G. N.—*A Case of Lateral Sinus Thrombosis in which the Klebs-Loeffler Bacillus was present.* "Brit. Med. Journ.," July 30, 1910.

Child, aged ten. Operation consisted in a radical mastoid, with exposure of the middle fossa, ligation of the internal jugular vein, and clearing out of the lateral sinus. The child recovered. Culture revealed the Klebs-Loeffler bacillus in almost pure culture.

Macleod Yearsley.

Smith, S. MacCuen.—*The Value of Thyroid Extract in Aural Manifestations of Myxædema.* "The Therapeutic Gazette," June 15, 1910.

The author brings forward three cases which improved upon the administration of thyroid extract.

Macleod Yearsley.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

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**DR. WATSON WILLIAMS ON THE EDUCATION OF THE
SPECIALIST.**

WE recommend our readers to peruse with care the Presidential Address delivered at the opening of the present Session of the Laryngological Section of the Royal Society of Medicine, as it contains a vigorously worded plea for the institution of special university degrees for those who propose to take up these subjects. Dr. Watson Williams expresses great anxiety that our specialty should not become a mere adjunct of surgery as such, an opinion which is all the more striking coming, as it does, from one whose contributions to the surgery of the organs we have to deal with have been by no means inconsiderable. Many have been forced to the opinion that the surgical side tends to be excessively developed to the detriment of the more purely conservative, and the means of arriving at a middle course is much to be desired; he suggests that general practice is, on the whole, a better preparation for our specialty than surgery pure and simple. He would wish to see the establishment of special degrees preceded by a special course of training, and he sees disadvantages following the tendency on the part of many who wish to take a good position in our department to prepare for and pass severe examinations in medicine or in surgery at a period of life when the benefit of humanity and the advancement of our specialities would be better studied by their devoting themselves to original research and

observation. No doubt it is indispensable that those who undertake the present-day treatment of diseases of the throat, nose, and ear must be thoroughly imbued with the principles of modern surgery, and the higher surgical examinations will probably offer the best means of testing the practitioner's knowledge in this respect. The difficulties of the case are met to a considerable extent by arrangements for special examinations for the Fellowship of the Royal College of Surgeons of Edinburgh, even though it may to a small extent be open to the objections expressed by Dr. Watson Williams, but we recommend our readers to study his *ipsissima verba*.

A NEW OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

A SCOTTISH Otological and Laryngological Society has been formed, and the first meeting was held on November 11, in Edinburgh Royal Infirmary, under the chairmanship of Dr. Logan Turner. Afterwards the members present, to the number of twenty-four, dined together at the Caledonian Station Hotel. For the present it is proposed to hold two meetings in the year, one in Edinburgh and one in Glasgow. The next will be held in Glasgow, under the chairmanship of Dr. Thomas Barr. The secretary for 1910-11 is Dr. W. S. Syme, Glasgow.

This Society has every prospect of a successful career, if we may judge—as no doubt we are justified in doing—by the output of our Scottish otologists and laryngologists in the form of contributions to the proceedings of societies as well as in original text-books and monographs. There has always been considerable difficulty in arranging for the meetings of the Otological and Laryngological Societies in London so as to meet the convenience of the metropolitan, provincial, and the Scottish members at the same time. It has been cordially acknowledged that the Metropolitan members have endeavoured in every way to facilitate the removal of these difficulties, but from unavoidable circumstances this has never been successfully accomplished, and no doubt one result of this is the formation of the new Scottish Society. It is to be hoped that its existence will not deprive their *confrères* in the south of the benefit of discussing with them the cases and questions in regard to which their opinions have always been so highly valued, and, in any case, we look forward to affording our readers a valuable and interesting addition to the contents of our

JOURNAL in the shape of the proceedings of the Scottish Otological and Laryngological Society, to which we offer our most hearty good wishes.

THE EDUCATION OF THE SPECIALIST IN LARYNGOLOGY RHINOLOGY, AND OTOTOLOGY.

A PLEA FOR GRADUATION ON A BROAD BASIS.

The Presidential Address at the opening of the Session 1910-11 of the Laryngological Section of the Royal Society of Medicine.

BY P. WATSON WILLIAMS, M.D.LOND., ETC.,

President of the Section of Laryngology and Vice-President of the Section of Otology; in charge of Department for Diseases of Nose, Throat, and Ear, Bristol Royal Infirmary: Lecturer on Rhinology and Laryngology, University of Bristol, etc.

ἡ ἀνεξέταστος βίος οὐ βιωτὸς (The life without examination is not worth living).—
Plato.

GENTLEMEN,—In electing me as President of the Laryngological Section of the Royal Society of Medicine, I am conscious that you have paid me the highest honour that it is in your power to bestow. I wish sincerely I could feel equally conscious of being worthy to follow my two distinguished predecessors in office. Of one thing, however, I am certain, that is, the pervading harmony which exists between the members of this Section, amongst whom criticisms are offered with only the friendly desire to help one another in points of difficulty, or to advance knowledge in this special branch of medical science, and it will be my constant aim to maintain this spirit of confraternity.

Coming from Bristol, where, as you are aware, we have recently developed a University, my thoughts have perforce been turned in the direction of educational matters, and as a lecturer on diseases of the nose, throat, and ear, I have given much consideration to the position of our own speciality in medical education, which in the interests of practitioners and of patients leaves something to be desired.

We hear it said that this is a day of specialism, and specialism in medicine and surgery is thought to be a modern development. Yet we learn from the Ebers' papyrus that in the thirteenth century B.C. patients applying for relief to the medical temple at Thebes had to state their complaint, and that it was left to the principal of the medical staff to send the specialist best suited for

the case.¹ We find that the practice of surgery was distinguished from medicine even earlier than the thirteenth century B.C., and it is recorded that in Egypt each physician treated a single disorder and no more, some devoting themselves to the eye, others to the teeth (they made artificial teeth, and some have asserted that they have found traces of gold stoppings in the mummies), and others, again, devoted themselves to disorders of the intestines, while yet others were obstetric physicians called in by midwives to the difficult cases.

In our own land, when in 1460-61 a charter was granted to the Barber Surgeons, and the Edinburgh Charter was obtained in 1505, surgery in a humble way started on its career divorced from medicine, and under the paternal fostering of the College of Surgeons became a science and art distinct from internal medicine.

We find in consequence that in Great Britain, and later also in Ireland, the field of medical science was long occupied by rival schools of medicine and of surgery; hence arose our academic distinction between medicine and surgery peculiar to this country, for in practically every European nation except our own a certain course of study is laid down, and for all their practitioners, State examinations must be passed. If a degree is obtained, it is always that of doctor of medicine; there is no distinct qualification in surgery, and it is the same in Canada and the United States. After qualifying on a common basis, the graduate is free to follow his own bent, and if he seeks to become a pure physician, surgeon, or specialist, he must establish himself as such, not by passing further examinations, but by his clinical and research work. Thus, while the degree of M.D. serves for all physicians, surgeons, and specialists alike, their subsequent differentiation is clinical and not academical as with us.

We alone carry examinations quite beyond the qualifying stage to the higher standards of medicine and surgery, and he who aspires to the charge of a teaching clinic and consulting practice must, as a rule, first obtain a higher and special qualification in medicine or in surgery respectively, involving a further and more advanced course of study. Though not without drawbacks, this has the advantage of ensuring that the more highly qualified physician or

¹ It would appear that only a few of the students remained to the end of their medical course at Thebes, the most gifted being then sent to the celebrated faculty of Heliopolis, whence they returned to Thebes, where they became physicians to the Court, and, attached to some priestly college, were consulted in serious cases.—“Uarda,” i, p. 32, Ebers.

surgeon has received, over and above what is necessary for qualification, a very thorough grounding in current medical or surgical science and all that immediately pertains to it, and the custom has coincided with an increasingly high standard of original medical and surgical work in this country. The plan has answered so long as the whole range of medicine on the one hand, or of surgery on the other, could be mastered by one individual; but with advancing knowledge pure medicine and surgery are no longer the only specialities, and with the growth and development of newer special branches the objections to our English system appear. Either we must continue our unfortunate custom of mentally placing each speciality under the category of medicine or of surgery, and of demanding as the *sine quâ non* for teaching clinics the corresponding medical or surgical qualification, although it may have no special bearing whatever on the specialities in question (in my own hospital both the laryngologist and the obstetrician of the future are distinguished in that they will have to possess all the higher qualifications both of the physicians and of the surgeons), or we must be consistent, and offer opportunities for a qualified practitioner taking his higher qualification in his speciality, after a course of post-graduate study and practice *parallel* to that required for the physician or the general surgeon.

No one could be more opposed to too early or too narrow specialisation than I am, for it is certain that a sound up-bringing in the whole range of general medicine and surgery is the only safe foundation for any special branch. But the tendency is to make another speciality—general surgery—the academic test of fitness in laryngology, while medicine, and even systematic training in our department is made a secondary consideration with a consequent danger of our becoming too exclusively surgical. In no other speciality would this be more deplorable than our own, for which I believe general practice is as good taking-off ground as pure surgery. We want contributions from all points of view, and it should always be open to every practitioner to specialise in any direction according to his opportunities for so doing.

To our fellow-countryman, Robert Liston, belongs the honour of publishing,¹ in 1837, directions for laryngoscopy, which he

¹ Liston, "Practical Surgery," London, 1837, p. 350: "The existence of this swelling can often be ascertained by careful examination with the finger, and by means of a speculum; by such a glass as is used by dentists on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards and carried well back into the fauces, a view may often be had of the parts."

recommended and employed for observing diseases in the larynx ; eighteen years later Mammel Garcia published his epoch-making observations, to be followed by those early giants in our speciality, Turck and Czermak, while so many of those who are here to-day have had the privilege of personal acquaintance with the slightly later but hardly less distinguished pioneers, when laryngology was still in its infancy, and many members of this Section have not only witnessed, but have generously contributed to, its exceedingly rapid growth and development. Indeed, most of us have had to acquire our knowledge to a large extent first-hand, and it has not always been easy to keep so thoroughly in touch with the rapid advances all the world over.

But things are very different from what they were when I started practice, and hardly any individual is capable of a complete mastery of the whole range of rhino-laryngology, and if otology be superadded the ground is so extensive that, without devoting his whole time and attention to these subjects over several years, no one can hope to be a scientific expert throughout such a large territory.

It is no small matter to acquire an accurate knowledge of anatomy, pathology, and, in so far as they bear on the diseases of the nose, throat, and ear, of neurology and general medicine, the ætiology, diagnosis, and treatment of diseases of these, together with a fair acquaintance with the various methods of treatment and operations which have been, or are, employed, as well as the acquirement of the operative and diagnostic technique, including the trachea and œsophagus, for it is to the honour of our speciality that our laryngological colleagues abroad, where the development of specialities has been better fostered, have originated and made practical tracheoscopy, bronchoscopy, and œsophagoscopy.

I think no one who is not ignorant of the work that is being done by laryngologists and otologists can deny that, *as an addition* to that sound general education in the principles of medicine and surgery for pass qualifications, all this involves as much, if not more, study as is demanded of those who present themselves for a Fellowship of the Royal Colleges of Surgeons or a mastership of surgery at a university, or an M.D. in obstetric medicine, in State medicine or in pathology, or an M.S. in dental surgery.

All these degrees in special branches may be acquired at the London University, and I sincerely hope that, on similar lines, a graduate may ere long be able to take a higher degree in our speciality. Surely the practitioner who so qualified himself for

work in laryngo-otology should have the opportunity of being tested by examination and of obtaining his higher degree in this department. He would be better equipped for making the utmost use of his riper clinical experience than by devoting himself instead to acquiring an exact knowledge of the anatomy of the whole body and the whole range of advanced medicine or general surgery, *usually at the expense of systematic liberal study of his speciality and all that pertains to it.* To test such study by examination too late in life would be a grave misfortune. Already the tendency in this country is to continue medical examinations unduly, and thus to trench too far on the precious years of early adult life, when a man's best original ideas are germinating and should be cherished and allowed spontaneous growth, instead of being trammelled and choked out of life by scientific pedagogy, as though Plato had stated that "life without *examinations* was not worth living."

We gather fruits in autumn, but life's spring is the sowing time. It is worse than useless to spend too long a time in tilling and preparing the ground, and still worse to disturb the roots by examination when we should be looking for blossoms of early research. There is more truth in the world-renowned Oslerism than is generally suspected, and particularly in the field of science; it is an open question whether, even before forty, one's mind ever breaks new ground in the sense of being original.

DEAFNESS AND DISEASES OF THE EAR IN RELATION TO THE PUBLIC SERVICES AND INSURANCE, AND THEIR BEARING ON FORENSIC CASES AND THE CHOICE OF A MEANS OF EARNING A LIVELIHOOD.

BY JOBSON HORNE, M.D.,

Surgeon to the Metropolitan Ear, Nose, and Throat Hospital;
formerly Ernest Hart Scientific Research Scholar of
the British Medical Association.

THE length of the title of this paper is out of all proportion to the length of time officially allotted for the reading of it. I do not for one moment suggest that the title should be curtailed, and it is still further from my intentions to trespass upon the time available for the discussion of the subject. The subject covers a considerable amount of ground, and is one about which there is undoubtedly room for more than one opinion; in short, it lends itself to discus-

sion. I shall therefore abstain from elaborating my views, and I shall confine myself to submitting for your consideration points that at times occasion considerable anxiety to those who have to adjudicate upon them.

It is not possible to lay down hard and fast rules, or even general principles of general application, for accepting or rejecting candidates the subjects of deafness and ear disease, coming within the scope of the title of this paper. What would be applicable to one would not be applicable to another. For example's sake, a candidate not acceptable for life insurance might be accepted for accident insurance and *vice-versâ*, whilst a third candidate might be acceptable for both classes of insurance and rejected for any public service, using the term in a comprehensive sense to include the telephone company and the indifferent waitress at the tea-shop. In the title of the paper the term "insurance" has been used to cover both life insurance and accident insurance.

Now, first of all, as regards deafness and ear disease in relation to life insurance. Let me at once remind you that there is an increasing competition amongst life offices for business, and whilst they are always most anxious to exclude lives the acceptance of which would be an injustice to others insured, at the same time they are not desirous of turning away business. At times there has been a tendency to regard middle-ear disease a little too seriously in the matter of life insurance. In a word, the life office has to temper medical science with business purposes.

The last time that this subject was discussed by the British Medical Association was in 1898, in Edinburgh, at a conjoint meeting of the Sections of Laryngology and Otology and that of Medicine in relation to Life Insurance. The difficulty that confronted that meeting twelve years ago, and prevented it from arriving at useful conclusions, confronts this meeting to-day, twelve years afterwards. The difficulty was this—an absolute want of reliable statistics upon which to base sound opinions. The meeting twelve years ago naturally dealt with suppurative diseases of the ear, to the exclusion, I may say, of all other forms of disease of the ear and of causes of deafness. They limited their subject to life insurance; to-day we are dealing with the subject in a much broader manner, and before I touch upon the suppurative diseases of the ear I would wish incidentally to refer to the non-suppurative varieties in connection with life insurance. For instance, can anybody present tell me from reliable statistics what is the average length of the life of a person the subject of otosclerosis? Further,

can anyone tell me the causes of death of such subjects, and whether the causes of death have any bearing upon the ear trouble from the point of view of the life office? Unfortunately the ear, hitherto, has been regarded too much as an appendage distinct from the body, with the result that our knowledge of the causes of some forms of ear disease has not advanced. In the present state of your knowledge can you with confidence state that insurance without delay should be recommended in otosclerosis?

The suppurative diseases of the ear naturally bulk the aural problems in life offices, and I wish to submit for your consideration and discussion the following points.

Speaking generally, persons suffering from acute inflammations of the external and the middle ear would not offer themselves for life insurance until the acute stage had passed by. However, exceptions arise; life insurance is at times a matter of urgency: Would you advise such cases being accepted in the acute stage? Is it advisable to put off insurance in cases of chronic inflammation of the external ear?

Passing to the middle ear, I think it will be generally agreed—but even about this matter I know there are two opinions—that chronic suppurative cases should not be accepted if there is inflammation in the attic or the mastoid, if there is cholesteatomata or tuberculosis, or any form of bone disease, or facial paralysis, or if there is associated with the middle-ear disease giddiness, headache confined to one side, or any kind of narrowing of the meatus which would prevent a free escape of secretion. Apart from such cases, would you recommend the acceptance of other cases of chronic suppuration of the ear?

Does a permanent perforation of the drum without obvious discharge call for, in your opinion, rejection of the candidate or some increase of premium? And lastly, as regards the suppurative forms of disease, should those chronic cases of suppuration regarded as curable by a radical mastoid operation be rejected or even weighted?

With regard to insurance against accidents, I think it will be agreed generally that marked deafness in both ears with vertigo should call for increased terms for acceptance, if not for rejection.

The suppurative forms of disease in the matter of insurance against accidents alone, at first sight, should not stand in the way of the acceptance of the candidate. However, there appears to be room for litigation over the meaning to be attached to the term “accident,” as shown by the recent case of a widow seeking to

recover compensation for the loss of her husband who was deliberately shot in a railway train. In the event of a subject of suppurative disease undergoing an operation for the cure or relief of ear disease succumbing to the operation, should that be regarded as an accident? If so, such cases ought to be weighted for accident insurance.

I will not take up your time in talking platitudes to you about the lack of attention paid to ear disease by insurance companies; but in illustration of my point, let me cite a recent experience. About a fortnight ago a lady, the subject of middle-ear suppuration of some thirty-five years' standing, involving the attic and the antrum, was advised to undergo a radical mastoid operation. Before acting upon the advice she consulted me. Whilst I fully agreed with her that she had been able to go through thirty-five years of life without the operation, and that possibly she might be able to go through another thirty-five years without it, at the same time, in the circumstances, I thought she had had sound advice given to her, and I advised her to submit to the operation. There was some hesitation, and in order to make my point clear to her, I mentioned that her position amounted to this, that no life office would put twopence upon her life until the operation had been done. The reply was, "Oh! you are quite wrong, doctor, I have already paid two premiums." "And in what office?" I inquired. The office was one of the best in the kingdom. I further inquired whether she had disclosed the fact that she had been the subject of ear disease for the greater part of her life, and the reply was, "Oh, yes, I mentioned that in my paper." "Did they examine the ear?" "Oh, no!" Well, accepting those statements as correct, personally I should be very sorry to be insured in the same office.

The environments and the social position of the candidate have to be taken into account as of some importance in life insurance when suppurative disease of the ear may be a factor in accepting or rejecting a life. Speaking generally, and excluding the more serious forms of suppurative disease, to which I have drawn attention, the well-to-do can be more readily accepted than those who through the harshness of circumstances cannot give up the time for the treatment of the disease; but at times, even amongst the well-to-do, whilst one hour in the day would be given up gladly to the arrangement of a coiffure, the cession of five minutes of life to the purification of a fœtid ear would be grudged. Such are the difficulties one has to contend against in advising and protecting a life insurance office.

The examination of candidates for the public services, and more particularly for the Civil Service, calls for even greater attention to deafness and diseases of the ear than in the case of insurance against accidents and life. Whereas some forms of deafness and disease of the ear would not preclude a candidate from being accepted for insurance, the same should, as I have already indicated, be grounds for rejection of the candidate for employment in any public service. Further, attention should be paid not only to existing deafness or ear disease, but also to any factors potential to the causation of such defects. In this matter the remarks by our President, Dr. Edward Law, in his opening address, drawing attention to the importance of paying attention to the nose and the naso-pharynx, and thereby getting down to the portal of entrance and bed-rock of many aural affections, are most applicable. Altogether, apart from actual deafness and the potentialities for its development, nasal obstruction is a serious detriment to a public servant in carrying out work which calls for well-sustained and concentrated attention. The advice given to the drowning man to shut his mouth and save his life has been most aptly paraphrased into "shut your mouth and save your brain" as a sound piece of advice for all in all stations of life. When the British Medical Association met at Exeter, I was included in a small party for which special permission had been given to visit Dartmoor Convict Prison. I was impressed by the remarkable absence of mouth-breathers amongst the inmates, and the doctor informed me that there was little or no ear disease in the institution. Free nasal respiration was no doubt responsible for their alertness of thought and for their fate. The impression left in my mind was that one had to be a brainy person to become an inmate of that institution.

As regards the bearing of deafness and ear disease on forensic cases, this part of our discussion is obviously concerned mainly with cases of malingering. For example's sake, when an individual seeks to recover compensation for alleged deafness resulting from an accident; here the ingenuity of the aurist may be taxed to the utmost to detect the low cunning of the individual. Doubtless other points in relation to forensic cases have occurred to some of you, and I should be glad if you would mention them in the course of the discussion.

Finally, coming to the choice of the means of earning a livelihood. This part of the subject can be considered usefully, I think, under two headings—those cases in which there is a family tendency

to deafness, and those cases in which the patient is already deaf. As regards the former, there are certain occupations involving great strain upon—one almost might say concussion of—the organ of hearing, such as the firing of large guns, boiler making, and similar occupations which should be avoided. Then there is a sociological aspect of the matter, such as matrimony, which, when followed by pregnancy, is liable to bring out a latent form of deafness or to intensify a pre-existing deafness. In such a matter one can only advise, one must not dictate, but in advising it is as well to bear in mind that matrimony is not always followed by pregnancy.¹ In cases in which the patient is already deaf, the choice of a means of earning a livelihood will, naturally, in a great measure be decided by the degree of deafness, and so I need not weary you by elaborating that point. It follows that a person with suppurative ear disease would be well advised not to seek a dirty or dusty occupation. I would only mention that the most marked deafness need not be the means of preventing the earning of a livelihood; on the other hand it may be of considerable assistance in doing so. There is money to be made by not hearing too much. I am not going to tell you tales about intentional deafness, but I can call to mind an old fellow with marked deafness who used to help me, in days gone by, with my research work. He excelled in photographing microscopic specimens. I placed the specimen under the microscope at the exact spot to be photographed; not a word was spoken, he looked through the microscope, the specimen was removed, and was returned with the photograph as required. After his death I employed another photographer, also advanced in years but not in deafness. He did a great deal of talking about what he was capable of doing, but he never did it. Another old fellow, also deaf, assisted me in literary research. He was so deaf that other people realised that it was useless to interrupt him at his work, with the result that my work was rapidly carried out, and carried out well.

Nine-tenths of what is said in this world might be left unsaid without the world being left any the poorer. The demands made upon the organ of hearing are far too exacting. A little deafness is at times helpful. Reverting again to my visit to Dartmoor Convict Prison—and here incidentally let me mention as bearing upon forensic cases that there is no opening there for an ear, nose,

¹ *Vide Trans. Otol. Soc. U.K.*, 1906, vol. vii, pp. 113, 114, remarks by Dr. Dundas Grant upon "The Influence of Pregnancy and Parturition upon Certain Forms of Progressive Deafness."

and throat doctor—I was much impressed by the amount of difficult technical work that could be done, and done well and rapidly, under the silence system. In the wheelwrights' shop I witnessed two of the inmates making a cart. The work necessitated co-operative movement in clamping and fixing the parts. Not a word was spoken by mouth, but much was said by the eye, and the work proceeded with a rapidity that, outside those grey walls, would have aroused the indignation of any trade union.

Without stopping to discuss genius and insanity, or sanity and ingeniousness, I left Dartmoor with the impression that the difference between a lunatic asylum and a convict prison, broadly speaking, was the excessive talking in the former and the remarkable silence in the latter, and that the remarkable silence was far more conducive to good and useful work, even in the presence of insanity, than excessive talking. I was so impressed by the advantages of the silence system that I contemplate introducing it into my hospital clinique, where silence would be so helpful in testing hearing. Anyone desirous of making a remark would be required to hold up the right arm above the head until the sign to speak were given. That would be wearisome, and the would-be speaker would start thinking before commencing to speak.

Lastly, as regards the lessons taught by this study of the economics of deafness, deafness and its attendant hindrances would not be so prevalent to-day but for the support it has received from the medical profession and the public in the past. The laxity with which ear disease and impairment of hearing have been treated in childhood must in no small measure be held responsible for the sad awakenings and disappointments in after-life. Further reliable statistics are sadly needed to enable us to speak with confidence on the several matters which we have under discussion. Altogether apart from the questions before us, it would be most instructive to learn the fate of the cases of old suppurative disease of the ear, and also of the non-suppurative cases. We seldom see in hospital suppurative disease of the ear in advancing life, or to put the matter more correctly, such cases that come under our notice are for the most part under thirty-five years of age. I gather that that is about the age at which life insurance is more largely effected. We may therefore assume that the cases of middle-ear suppurative disease, by the time they are submitted for life insurance, have given a good deal of indication of how they intend to progress. It would be a most useful piece of work were the special hospitals and the special

departments for diseases of the ear in general hospitals in London and the provinces to co-operate in compiling collective statistics to help us to speak with authority to life insurance offices and to similar bodies.

MNEMONIC TABLES FOR NORMAL LABYRINTHINE NYSTAGMUS.

BY JAMES ADAM, M.A., M.D.,

Aural Surgeon, Glasgow Royal Infirmary Dispensary.

THERE is reason to believe that a mnemonic aid to the normal reactions of practical, that is, clinical significance in labyrinthine nystagmus will not be despised by everybody. We know that rotation in one direction will produce nystagmus in the opposite direction, that hot water acting on one ear will produce nystagmus in one direction, cold in the reverse, and *vice-versâ* for the other ear. It is possible to recollect the physiological basis for all this, so far as that is yet known, and so to keep mind of the symptoms in logical fashion. It is easier to forget. Now the normal results can be easily remembered on the following simple plan, which the writer has been in the habit of using for over a year. + and - signs are used to designate things which, when opposed to each other, we should naturally designate as + or -.

Take first the caloric test. If hot water be +, cold -; right ear +, left -; head erect +, inverted -; nystagmus (quick movement) to right +, to left -; then we have:

TABLE I.—*Caloric Test.*

Ear.	Head.	Water.	Nystagmus.
+	+	+	+
+	+	-	-
-	+	+	-
-	+	-	+

That is, taking the first line, we find that on the right ear, with the head erect, hot water gives nystagmus to the right. This line, being all +, is easily remembered, and the other three lines are at once inferred from it; for if we change water to - we of course change nystagmus to -; or if we keep to + water but change to

— ear we again have — nystagmus. A table for head inverted can be written from this one.

Similarly, in the rotation test, clockwise rotation (to right) is +, counter-clockwise —.

TABLE II.—*Rotation Test.*

Rotation.	(Eye deviation.)	(Ear tested.)	Nystagmus.	Fall.
+	—	—	—	—
—	+	+	+	+

That is, with + rotation, the head being erect, we are testing mainly the left ear, and the nystagmus on stopping the rotation is to the left (the eyes being deviated to the left, the side of the quick movement, in order to elicit it); the tendency to fall (while head is erect) is to the left. The second line follows by inference from the first.

Lastly, take the fistula test for fistula in external semi-circular canal with intact labyrinth. Here compression of air in auditory canal, positive pressure, is +; aspiration or negative pressure —.

TABLE III.—*Fistula Test.*

Ear.	Pressure.	Nystagmus.
+	+	+
+	—	—
—	+	—
—	—	+

That is, compression of right ear gives mostly nystagmus to right, aspiration to left; the reverse for left ear. The three last lines follow by inference from the first.

It will be found that these tables are much more easily remembered than the facts without them; that is their excuse.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE ROYAL SOCIETY OF
MEDICINE—LARYNGOLOGICAL SECTION.*Meeting on Friday, November 4, 1910.*DR. P. WATSON WILLIAMS, *President, in the Chair.*

(For President's introductory remarks see p. 619.)

THE following cases and specimens were shown :

TWO SPECIMENS OF THE QUADRILATERAL CARTILAGE (NASAL SEPTUM)
SHOWING WINDOWS; REMOVED BY SUBMUCOUS RESECTION.

BY DR. DAN MCKENZIE.

One of the specimens was removed by Dr. Horsford, the other by the exhibitor. They were interesting for two reasons: first, because the presence of a window in the septal cartilage, with intact mucous membrane, renders the operation of submucous resection more difficult, unless the possibility of this condition is remembered; secondly, because the spontaneous production of septal perforation from ulceration is favoured by the presence of such windows. In the exhibitor's experience, acute perforating ulcer of the nasal septum, penetrating not only mucous membrane, but also cartilage, was extremely rare. As to the cause of these windows, the opinions generally seemed to be that they are sometimes developmental and at other times are induced by the long-continued bilateral pressure upon the cartilage of mucous scales or crusts.

Dr. WM. HILL said that these specimens taught caution in performing submucous resection.

Dr. HORSFORD, who had operated on one of the cases, said that the mucous membrane was very thin on one side; otherwise it was healthy. Some difficulty was experienced in separating the layers of mucous membrane from each other. The circular shape of the fenestra and its bevelled edges proved that it was not produced during the operation. He could not agree with the theory of long-continued pressure. He supposed that the pathogenesis of such fenestrae was this: In rhinitis sicca ulceration of the septal mucosa took place, and crusts formed over the ulcer, which then healed. In the meantime, as a consequence of the ulceration, a superficial layer of cartilage had undergone disintegration. A repetition of this process would end in the formation of a fenestra.

Mr. CLAYTON FOX said that the healthy character of the mucous membrane negatived the idea of pressure, hence he looked upon the fenestræ as probably congenital.

The PRESIDENT remarked that dehiscences in the septal cartilage were known to occur congenitally. He could not understand how they could be produced by pressure.

Dr. DAN MCKENZIE, in reply, agreed that some of these fenestræ were developmental. At the same time he thought that the continuous pressure of mucous scales, by inducing anæmia and ischæmia, would form a window. In both these cases the fenestra was situated at Kiesselbach's area.

CASE OF SUBGLOTTIC STENOSIS AFTER TRACHEOTOMY.

BY MR. HAROLD BARWELL.

The patient, a woman, gave a history of diphtheria in childhood, when tracheotomy was performed in great haste for urgent dyspnoea. Since then the voice had been affected, but there did not appear to be any serious interference with respiration. The "tracheotomy" was evidently performed through the cricoid cartilage, and a thick cicatricial web with a posterior aperture could be seen below the cords. The case did not seem to require treatment.

SCLEROMA OF THE NASO-PHARYNX IN A POLISH WOMAN.

BY DR. STCLAIR THOMSON.

This patient had been shown before the Laryngological Society of London in February, 1907, and her case was described in the *Proceedings*, vol. xiv, p. 65. It seemed that for about ten years she had had increasing difficulty in nasal respiration. Seven years ago an operation was performed in Dr. Heryng's clinic in Warsaw, with some relief. When exhibited in 1907 there was a red, fleshy diaphragm extending from the base of the soft palate upwards and backwards to the roof of the naso-pharynx. Through an oval opening in the centre of this fleshy membrane one could see a small part of the posterior edge of the septum. Under chloroform this fleshy membrane, which was found to be of almost cartilaginous-like hardness, was plucked away, partly through the mouth and partly through the nose. Nasal respiration was completely restored, and the patient remained quite comfortable for two years. In March, 1910, the membrane was again seen to be re-forming, and the condition now was very like what it was in February, 1907. At the operation two years ago it was difficult to

get a satisfactory piece of growth for examination as it all came away in shreds. But examination by Dr. Emery failed to reveal Frisch's bacillus.

The PRESIDENT thought that the disease seemed to be arrested.

Dr. STCLAIR THOMSON said that only two cases had been reported in this country, one by Sir Felix Semon and Mr. Page, the other by Dr Dundas Grant. This case had not been proved up to the hilt. Frisch's bacillus was no longer looked upon as specific, and Mikulicz's cells, which are said to be diagnostic, had not so far been discovered in this case. He proposed to operate again, and would report the case later. Scleroma limited to the naso-pharynx was said to be very rare.

FUNGATING CARCINOMA OF ŒSOPHAGUS; DISAPPEARANCE OF FUNGATION AND ULCERATION AFTER TREATMENT BY RADIUM.

BY DR. WILLIAM HILL.

Male, aged forty-nine. Note on admission, June 18, 1910: "Gradually increasing dysphagia and occasional odynophagia for six months; for last six weeks there has been considerable regurgitation; during last two weeks has only been able to swallow fluids, and with difficulty; is losing weight."

Patient was examined with œsophagoscope under cocaine and also under chloroform. Gullet dilated, and pieces of mutton, partaken of three weeks previously, removed by lavage; ulcerating and fungating stricture found 28 cm. from incisor teeth; bled easily and profusely. Tight but short stricture dilated with graduated bougies and exhibitor's styletted modification of Symond's long intubation tube inserted for ten days; swallowing improved. On July 9, 50 mgrm. of pure radium bromide applied for thirteen hours. Two months later radium again applied for twenty-four hours. Progressive improvement in swallowing, which was now almost normal. When examined on October 8 there was no sign of fungation or ulceration, no marked stricture, merely scarring of mucosa. The diagnosis was confirmed by microscopical examination (squamous epithelioma), but whilst under radium treatment all endoscopic evidences of malignancy had disappeared. Had put on 2½ st. in weight.

? Temporary cure.

Mr. HAROLD BARWELL hoped that the case would be reported again at a later date. There certainly was no sign of any growth at present.

Dr. WM. HILL had applied radium in the hope of simply relieving the dysphagia. He had treated another case with the same result, but in that case he did not obtain a specimen of the growth. He did not claim the case as a cure. As a rule radium relieved the stricture if the

carcinoma was limited. He had in his possession a slide showing the nature of the growth, and would hand it to the Morbid Growths Committee.

Dr. H. J. DAVIS asked if radium was of any use in cases where the stricture could not be threaded. He had that day seen a case with Mr. Butlin in which X-ray examination showed the bismuth bolus to be arrested on a level with the upper part of the sternum. The finest bougie could not be passed, and a diagnosis of malignant stricture was made. He asked whether this case would be relieved by radium.

Dr. STCLAIR THOMSON doubted whether a diagnosis of malignant stricture of the œsophagus should be made before it had been examined by means of the œsophagoscope. In Dr. Hill's case he corroborated the observation that all sign of growth had disappeared. He had been using Dr. Hill's tubes with great success.

Dr. WM. HILL said, with reference to Dr. Davis's case, that the stricture should not be considered impermeable until attempts had been made to thread the stricture by the direct method. The permeability of a stricture often depended upon the skill and patience of the surgeon. If a two-millimetre bougie could be passed, then as a rule the stricture could be dilated up to ten millimetres, one bougie being passed in by the side of the other. In an impermeable case he would apply radium in the hope that after the reaction following the first exposure the stricture would be relieved enough to permit of the entrance of a fine bougie. He gave his patient morphine and atropin to prevent salivation and the desire to drink, and made the radium application on an empty stomach.

CARCINOMA OF ŒSOPHAGUS; DYSPHAGIA TREATED BY NEW FORM OF INTUBATION APPARATUS.

BY DR. WM. HILL.

Male, aged forty-nine. History of five months' dysphagia; much frothy mucus expectorated; cough; abductor paralysis. Œsophagoscopy showed fungating growths on anterior and posterior wall; tight stricture 28 cm. from teeth; portion removed for microscopy (epithelioma). After great difficulty and delay, stricture was threaded and dilated up by graduated bougies, and exhibitor's styletted modification of Symonds' long rubber intubation apparatus inserted. Patient at first fed entirely through tube, but could now swallow soft food beside it; mucorrhœa much less; patient much less asthenic. The disease was considered too advanced, and the actual strictured area too long, for radium treatment, but the method of permanent intubation employed did away with the necessity of resorting to gastrostomy.

(Exhibition of apparatus with dental attachment.)

GROWTH (TUBERCULOMA) OF LEFT VENTRICULAR BAND.

BY DR. WM. HILL.

Female, aged forty-five. Evidences of tuberculosis in lungs, but disease not advanced. Opinions were invited as to advisability

of removing the projecting overgrowth to relieve aphonia, cough, etc.

A CASE ILLUSTRATING "DENTS DE SCIE" OF THE VOCAL CORDS.

BY DR. JOHNSON HORNE.

The patient, a woman, aged forty, came under observation towards the latter part of last August through huskiness of the voice of twelve months' duration. She was also the subject of middle-ear suppuration. The huskiness was sudden in onset, at first passing off, then suddenly recurring, and subsequently became constant. Formerly she sang in chorus, taking part in oratorios up to twenty-five years of age. Upon coming to London she discontinued singing. The patient was married at the age of twenty-nine. There was no family history of tuberculosis, and, as far as had been ascertained, there was no clinical evidence of that disease.

The condition which the larynx presented was a little unusual, and had been figured in text-books and described under the above title. In the present case the lesion was strictly confined within the sesamoid cartilages—that is to say, to the middle portion of both cords, the part covered by squamous epithelium. The condition was absolutely symmetrical, and, broadly speaking, might be described as a thickening of the middle third of the cord with serrating of the edge. There had been no local treatment apart from rest of voice, and the condition had somewhat subsided since it had first been observed. The question arose whether this condition was rightly described as being of a tuberculous nature.

Dr. HORSFORD did not think that the cord was thickened. It seemed to him that there was a soft growth on the surface of the left cord, and that there was a similar but less marked growth on the right cord. He suggested that it was a soft fibroma or even a papilloma, and he advised removal, followed by prolonged rest to the voice.

Mr. CLAYTON FOX thought the term "*pachydermia verrucosa*" applicable to the case. The cords looked as if fringed with polypi. He recommended rest and the topical application of 6 per cent. ac. salicyl. in alcohol.

Dr. STCLAIR THOMSON did not agree that the appearance was like the edge of a saw. The growths were not absolutely symmetrical. He had seen a case like it in a colleague in whom the Wassermann reaction was negative while the cuti-tuberculin reaction was positive. An injection of tuberculin also was followed by a marked reaction, the temperature rising to 103° F. The case had also been seen by Mr. Butlin, and he had suggested tubercle. There was no sign of lung trouble. He was now

about to treat it with tuberculin or the galvano-cautery. He therefore suggested that Dr. Horne's case should be tested for tuberculosis.

Dr. DUNDAS GRANT said from the title given one expected to see a different appearance. He regarded these as only multiple fibromata. No one could tell beforehand that they were not tuberculous, nor until a portion had been removed for examination. Dr. Horne would have no difficulty in bringing about much improvement, probably first by removing a portion of the growth at the edge of the cords, and afterwards applying the galvano-cautery. He did not think it was likely to be benefited by salicylic acid. It did not answer to his idea of pachydermia.

Dr. JOBSON HORNE, in reply, agreed that the title was not a good one. In opposition to Dr. Horsford, he thought that the cord was thickened. He proposed to remove the outgrowths, and would show the case later. It might be tuberculosis, but the limitation of the disease to an area not liable to tuberculous deposits was against the idea.

ULCERATION OF SOFT PALATE.

By Dr. FITZGERALD POWELL AND Dr. BADGEROW.

Female, aged seventeen. Patient was suffering from a granular-looking superficial ulceration of soft palate, extending forward on to the hard palate. At the junction of hard and soft palate, a perforating ulcer could be observed, through which a probe could be passed. No rash to be found on body on first examination, but an iodide rash has appeared since. No history of syphilis. Thought to be tubercular, but the opinion of the Section was desired.

The PRESIDENT thought the perforation syphilitic and not tuberculous.

Dr. JOBSON HORNE said there was no evidence of tuberculosis.

Dr. W. H. KELSON suggested lupus.

Dr. FITZGERALD POWELL adhered to the diagnosis of tubercle in view of the failure of anti-specific remedies.

CASE OF TUMOUR OF POST-NASAL SPACE (shown at previous meeting).

By Dr. FITZGERALD POWELL.

Man, aged twenty-seven. Tumour of post-nasal space seen pushing soft palate forward and involving palate; growing from lateral walls of naso-pharynx and infiltrating lining of same; extending down to tonsil, involving tonsil. Removed by operation, along with portion of palate involved and tonsil; good recovery. Obturator, closing opening, fitted by Dr. Pare.

Dr. W. H. PEGLER stated that according to Mr. Shattock the growth was undoubtedly lympho-sarcomatous.

Dr. FITZGERALD POWELL said that this view had been supported by a rapid recurrence of the growth.

TONSILLOLITH IN LEFT SUPRA-TONSILLAR FOSSA.

By MR. C. A. PARKER.

Tonsillitis in left supra-tonsillar fossa pushing forward the soft palate in a male, aged twenty-four. History of discomfort in the throat for nine months.

The PRESIDENT supposed that Mr. Parker would remove the calculus.

Mr. C. A. PARKER assented. A similar case to this had been before the Society at an early date, and the calculus was shown.

SMALL TUMOUR OF SOFT PALATE.

By DR. C. A. BADGEROW.

The patient, aged twenty-seven, a teacher, noticed about eighteen months ago a small whitish lump in the soft palate about the size of a small pea; it was now becoming darker in colour and was gradually getting a little larger.

Dr. JOHNSON HORNE said that similar cases had been exhibited before. After removal they usually presented the appearances of sarcomatous growths.

Dr. DAN MCKENZIE had shown before the Section a case somewhat like this some years ago. It proved on removal to be an endothelioma. There had been so far no recurrence.

Dr. BADGEROW intended to remove the growth, and would show it later.

LINGUAL THYROID; THYROID GLAND IN NECK NOT PALPABLE.

By DR. W. G. SPENCER.

Female, aged twenty-three. Swelling first noted by dental surgeon four months ago. Had caused no appreciable disturbance. Hemispherical swelling about 3 cm. in diameter over situation of foramen cecum, covered by the normal epithelium.

The PRESIDENT observed that cases had been reported in which the removal of a lingual thyroid had been followed by myxedema.

CASE FOR DIAGNOSIS AND SUGGESTIONS FOR TREATMENT.

By MR. T. JEFFERSON FAULDER.

R. P—, female, aged twenty-three, had a swelling at the left side of the nose and inner canthus of left eye. It first attracted

her attention about three years ago by causing pain. She now had intermittent headache and on stooping felt giddy. She suffered from nasal obstruction; the mouth was always dry and offensive in the morning, when she coughed up some "phlegm and bad blood." This condition improved during the day. There were no ocular symptoms except some epiphora and irritation.

The swelling in the left inner canthus and the outward displacement of the left eye could be easily seen. The swelling corresponded in position to the lamina papyracea of the ethmoid bone, and the tendo oculi was stretched across its front. It was hard, rounded, sessile, and slightly tender. There was a swelling of similar character in the antero-superior part of the left nostril. The post-nasal space was normal in all respects except for dryness of the mucosa. Transillumination of antra equal and remarkably bright; of frontal sinuses negative, or, if anything, somewhat against the right sinus.

With the case were shown:

(a) Photographs of the patient at the ages of six months and fifteen years, both showing asymmetry of the orbits.

(b) Skiagrams showed nothing abnormal.

(c) An orbito-nasal (ethmoidal) exostosis removed from a female patient, aged twenty, who had proptosis, diplopia, and defective vision ($\frac{3}{60}$) of right eye, also right nasal obstruction. The tumour was visible in the naso-pharynx, blocked up the right nostril, and was shown by skiagrams to extend in the orbit as far back as the optic foramen. It consisted of cancellous bone with a covering of dense eburnated bone. This patient had recovered her vision and remained well ten months after operation.

Dr. STCLAIR THOMSON thought that the swelling was an osteoma, and advised its removal by Moure's operation.

CASE FOR DIAGNOSIS.

By Dr. NOEL BARDSWELL.

Mr. A—, aged thirty-two. History of pulmonary tuberculosis for the past three years. No specific history. History of hoarseness for the past eighteen months; was treated during this period in a sanatorium in Australia for laryngeal tuberculosis. The patient had chronic tuberculous disease in both lungs considerably arrested. In the larynx the left cord was absolutely fixed in the middle line, apparently with infiltration in front of the left arytenoid joint, and in the ventricular band. There was no

ulceration. On the tongue there was ulceration strongly suggestive of tertiary disease. The Wassermann reaction (done twice during the past ten days) was negative. Tubercle bacilli were present.

Treatment.—The patient had, as yet, been treated only by general sanatorium treatment and vocal rest.

Dr. W. G. SPENCER would not have said that the tongue was ulcerated; it resembled rather what was known as the "geographical tongue." A negative Wassermann on two occasions spoke strongly against syphilis.

Mr. H. BARWELL said that the larynx was not suggestive of active tuberculosis at the moment. It was a curious case, and he would be interested to hear opinions upon it.

Mr. PARKER had seen cases of laryngeal tuberculosis which had undergone spontaneous arrest without ulceration. He recalled a case with interarytænoid thickening, thought at first to be pachydermatous, which he was sure had been tuberculosis in a syphilitic subject. This might be a similar condition.

Dr. STCLAIR THOMSON had seen the case a few weeks ago, and had looked upon it as syphilis, but the negative Wassermann had led him to alter his opinion. He now agreed with Mr. Parker. Some time ago he had shown two cases of spontaneous recovery from tuberculosis of the larynx, in which fixation of the arytenoids had necessitated the wearing of a tracheotomy tube.

Dr. BARDSWELL said that Dr. Percy Kidd had diagnosed the case as one of tuberculosis of a chronic non-ulcerative type.

CASE OF APHONIA FOR DIAGNOSIS.

BY MR. CYRIL HORSFORD.

Patient, a married woman, aged forty-six, suddenly lost her voice in July last, and all attempts to restore it had failed. She gave a history of two previous attacks, both of which were cured spontaneously. For the first she had attended the Throat Hospital, Golden Square, under Sir Morell Mackenzie for twelve months. In the chest there were signs of chronic phthisis in both apices. The laryngoscope showed paresis of the arytenoidens and swelling of the ventricular bands, which completely hid the anterior two-thirds of the vocal cords, and by their approximation they replaced the latter during phonation. Was the case purely functional?

Suggestions as to treatment were asked.

Mr. CLAYTON FOX thought the case one of laryngeal tuberculosis, with myopathic paresis. There was some subglottic thickening on the left side.

Dr. W. H. PEGLER said there no doubt was aphonia, but he did not think it functional.

Dr. HORSFORD thought that the ventricular bands were thickened and tuberculous.

(?) MALIGNANT GROWTH OF THE LEFT VOCAL CORD.

By Dr. WATSON WILLIAMS.

A woman, aged forty, had been hoarse off and on for eighteen months. There was no history of syphilis. He proposed to remove a portion of the growth for examination.

(?) PARALYSIS OF THE INTERNAL TENSORS IN A WOMAN.

By Mr. MUECKE.

FISTULA OF THE LEFT MAXILLARY ANTRUM.

By Dr. DONELAN.

The patient was a man with an old syphilitic history.

Dr. W. H. PEGLER had shown at a recent meeting of the Section a case of antral fistula due to traumatism.

Dr. DONELAN said that it had been suggested that he should close the fistula by a transplantation of bone.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL
SECTION.

Friday, November 18, 1910.

Mr. A. CHEATLE, *President, in the Chair.*

(Abstract Report by Dr. DAN MCKENZIE.)

The following cases and specimens were shown:

A CASE OF CONGENITAL MALFORMATION OF THE AURICLE AND
MEATUS.

By Mr. ARTHUR CHEATLE.

A woman who had a small but well-formed auricle without a meatal opening. There was some hearing, and the rotation test showed vestibular reaction. There was asymmetry of the face.

The mastoid process was flattened as compared to the other side. An X-ray photograph showed the presence of mastoid cells, demonstrating that a middle-ear tract of some sort was present. An exploratory operation had been performed, but no meatus was found. There was no evidence of the tympanic plate, and the jaw appeared to articulate with the posterior meatal wall. A small accessory auricle above and in front of the real auricle had been removed.

Dr. JOHNSON HORNE said that two questions of interest were raised by this case. First, the advisability of operating in such deformities. He understood that unless there was definite evidence of the passage of air through the Eustachian tube there was no use in operating in order to find a meatus. Secondly, he suggested that in these conditions a general examination of the skull should be made, and not merely an examination of the temporal bone. He had examined in this way a number of cases, and they showed that the skull as a whole was abnormal.

Dr. MILLIGAN thought operation justifiable when palpation revealed the presence of an annulus tympanicus, and when the air was heard, by stethoscope or otherwise, to pass into the middle ear. He asked whether the naso-pharynx had been examined in this case, and what was the state of the Eustachian tube.

Mr. WEST asked what structure the lower jaw articulated with. He presumed it was with the anterior surface of the mastoid process.

Mr. CHEATLE, in reply, said that operation had been undertaken because the patient had a certain amount of hearing, and rotation proved the existence of a vestibular system. He had catheterised the Eustachian tube, and his assistant had been able to hear air passing into the ear, although he himself could not. He had tried to elicit the caloric reaction by syringing iced water into the Eustachian tube, but without any result. The jaw, as Mr. West had surmised, articulated with the anterior aspect of the mastoid process.

A CASE OF HEALED FRACTURE OF THE RIGHT TEMPORAL BONE IN WHICH THE LINE OF FRACTURE IN THE MEATUS CAN BE SEEN.

By MR. A. CHEATLE.

A man, aged thirty, sustained a fracture of the base of the skull, involving the right temporal bone, at the age of ten years. A certain amount of middle-ear deafness resulted. On examination cicatrices were to be seen in Shrapnell's membrane and in the posterior segment of the membrana tensa. The line of fracture was visible in the posterior superior wall of the bony meatus. Small gaps in the bone, filled in by flaccid membrane, could be seen. The internal ear was not affected. This was the third case of this condition he had observed.

NOTE OF A CASE OF NERVE DEAFNESS IN A SYPHILITIC OF THIRTY YEARS' STANDING.

BY MR. A. CHEATLE.

A man, aged fifty-one, had syphilis at the age of twenty-one. For seven or eight years he had noticed the gradual onset of deafness, with ringing tinnitus in both ears, the right being the worse. No giddiness, headache, herpes, or facial paralysis. Examination showed marked nerve implication. No signs or symptoms of tabes or of involvement of other nerves. Wassermann test was positive. He had stated, in opening the discussion on syphilis at the last meeting, that he could not be certain that, apart from tabes, there was a progressive sclerosis of the auditory nerve alone. This case, however, appeared to be of that nature.

SPECIMEN OF TEMPORAL BONE FROM A CASE OF THROMBOSIS OF CAVERNOUS SINUS; PROPTOSIS AND SUPPURATIVE PHLEBITIS OF BOTH ORBITS FOLLOWING RIGHT MASTOID DISEASE OF TWENTY YEARS' DURATION; EXTRA-DURAL ABSCESS; LATERAL SINUS AND JUGULAR VEIN UNAFFECTED.

BY DR. H. J. DAVIS.

A woman, aged thirty-six, who was still suckling a child eleven months old, was admitted on October 25. Four days before admission a right-sided otorrhœa, which had persisted for twenty years, suddenly ceased; "headache, shivering attacks, and sickness followed."

Temperature 105° F.; no optic neuritis, but slight rotatory nystagmus on looking to the right; typical mastoid signs absent. Complete mastoid operation forthwith; the bone was of ivory hardness; antrum full of pus and granulations blocking aditus; no erosion noticed in either fossa. Lateral sinus exposed but not involved; wound left open; temperature fell to 99° F. Next day patient had rigors with cervical tenderness. At the second operation the mastoid process was chipped away and the lateral and sigmoid sinus freely exposed; it was engorged, but there was no thrombus. The middle fossa was then opened and an extra-dural abscess evacuated; it was situated in the angle between the middle and posterior fossæ over the superior petrosal sinus; all overhanging bone was removed to allow of free drainage, and the wound packed with gauze and left open. Next day there was conjugate deviation of eyes to the right (towards the lesion), with

violent spontaneous horizontal nystagmus towards the left, producing intense vertigo, unless the eyes were closed. Proptosis and ecchymosis with blindness of the right eye followed; there was facial paralysis, and later the left eye became affected. The patient gradually sank, and died on the fifth day.

Post-mortem.—Brain, lateral sinus, and jugular vein unaffected, but a thrombus extended from the right superior petrosal sinus (as could be seen in the specimen exhibited) to the cavernous across the circular sinus to the ophthalmic veins of the opposite side. The diagnosis of septic thrombosis was correct, but it was in the opposite direction to what was anticipated until the ocular symptoms developed.

The PRESIDENT remarked that the temporal bone in the case was of the infantile type—a common and dangerous condition. The infection had been shown to pass through the antrum by the small veins that empty into the cavernous sinus.

Mr. S. SCOTT thought that the case was instructive, because it had shown the path by which the cavernous sinus had become infected. There were many *post-mortem* records of sinus thrombosis in which the route of infection could not be traced.

Mr. SECCOMBE HETT had seen a case similar to this. The patient was a boy, aged eleven, with bilateral otorrhoea, and was admitted to hospital with acute mastoiditis on the right side. When the mastoid was opened pus was found in the cells and in the sinus groove. No improvement resulting from this operation, a second was undertaken. The lateral sinus was not thrombosed, but a probe passed along the track of the perisinus abscess came into contact with the internal carotid. The left mastoid was also explored and found to contain pus, but the sinus and dura were healthy. The following day the right eyelid became oedematous, and twenty-four hours later the left eyelid also, and the patient died. The *post-mortem* showed that the infection had travelled along the internal carotid. The right cavernous sinus was full of pus, and the circular and left cavernous sinuses were thrombosed. There was no thrombosis of either lateral sinus or of the petrosal sinuses.

A CASE OF EXTRA-DURAL CEREBELLAR ABSCESS TRACKING THROUGH THE JUGULAR FORAMEN INTO THE NECK; SLOUGHING OF MIDDLE THIRD OF INTERNAL JUGULAR VEIN; OPERATION; RECOVERY.

By DR. H. J. DAVIS.

Clinically the history of the case is instructive. A girl, aged nineteen, after being ill a fortnight with vague symptoms resembling enteric fever, was certified as such and admitted into one of the London fever hospitals, where she remained three weeks. She was then transferred to the West London Hospital owing to

the presence of a large œdematous swelling extending down the neck and gradually increasing; Widal's reaction had been negative. There was a history of occasional slight otorrhœa for eighteen months, and since the commencement of illness five weeks ago "sickness and shivering fits."

I saw the patient late one night (October 31), shortly after admission. She was sensible, but very ill; she complained of headache and intense thirst; the right pupil was widely dilated, and this had existed ever since; it looked like a case of typhoid, but this was not the disease from which she was suffering. Double optic neuritis present; temperature, 104° F. There was œdema over the scalp and mastoid, and a large swelling in the neck resembling a unilateral enlargement of the thyroid, and pus was streaming out of the ear. Operation forthwith under A.C.E. On opening the antrum pus pulsed out of the cavity at each systole; the sinus, covered with granulations, bulged at once into the wound; it was far forward, and exposed at the second blow of the chisel (16 mm. Alexander's pattern); pus had tracked between the dura and bone over the posterior and anterior surfaces of cerebellum (the lateral sinus did not appear thrombosed), and had then tracked through the jugular foramen, as well as through a hole in the mastoid, along the digastric groove into the neck. A double incision was made in the neck and a tube inserted. The patient was infused and returned to bed with the brain cavity and neck incision open. The next two days she was much better, but complained of intense hunger and thirst; she was allowed what she fancied; her particular cravings were "for an apple and acid drops."

On November 3, as improvement was maintained, a second operation was performed, and the internal jugular was tied at the level of the clavicle. The mastoid process was removed, as also the bone down to the jugular foramen; on pressing the neck pus welled out between the jugular bulb and the bone. An incision was made down the neck to the clavicle, and the middle third of the interval was found to be sloughed, forming part of the abscess cavity; this was syringed through in the usual way; the vein, or, rather, the remains of it, were left *in situ*, but all clot removed. The patient, who collapsed, was given 3 pints of saline by infusion through the arm veins, and returned to the ward. A few hours later she became again suddenly collapsed and cyanosed, and appeared to be dying (pulmonary infarct as a result of a detached thrombus from ligatured vein?). Strychnine, oxygen, and con-

tinuous subcutaneous infusion were given; she received $3\frac{1}{2}$ pints under right breast and $2\frac{1}{2}$ under the left, and 1 pint *per rectum*, making 10 pints in all since operation. He had little doubt that this had saved her life, for cyanosis faded and the patient recovered consciousness; she rallied in the night, and since then improvement had continued daily.

November 8.—The wound, an extensive one, commencing 2 in. above the pinna and extending to the clavicle, was dressed daily by plugging with cyanide gauze saturated in a "soap emulsion," which has cleaned the cavity in a remarkable manner. Dr. Dundas Grant first brought the solution to my notice. The formula is as follows: Potash soap, ʒj ; soda soap, ʒj ; olive oil, ʒi ; distilled water to ʒj . A mixture (liq. ammon. fort. mʒ in water) is administered every two hours. Ammonia, in addition to its stimulating properties, reduces liability to thrombosis by its action on the blood.

The PRESIDENT said that he had only seen one case of this kind.

Mr. WEST thought that "cerebellar" extra-dural abscess in Dr. Davis's first case was an incorrect term to use. "Extra-dural abscess of the posterior fossa" was preferable. The case was a very remarkable one, and Dr. Davis was to be congratulated upon the happy issue.

Dr. JOBSON HORNE suggested that the designation "extra-dural abscess" was sufficient.

Dr. H. J. DAVIS, in reply, said he agreed with Mr. West that the term "cerebellar extra-dural abscess" was incorrect. In his second case the jugular vein had been tied low down because the clot extended far down in the vein. He had made the mistake of tying another large vein instead of the internal jugular. After this vein had been tied and the lower wound sewn up, a probe was passed down the sloughing vein, and as it reached a deep level showed the mistake he had made. The patient, who, in the beginning, had been treated for typhoid fever for five weeks, was now doing well.

A CASE OF LATERAL SINUS THROMBOSIS (STREPTOCOCCAL), WITH EARLY PULMONARY METASTASIA; RECOVERY.

BY MR. SYDNEY SCOTT.

N. H.—, female, aged eleven, was admitted to St. Bartholomew's Hospital on September 1, 1910, under the care of Mr. Scott, for discharge from the ears and pain in the head.

History.—Bilateral otorrhœa and defective hearing since aged three. Measles in infancy, and scarlet fever when aged nine. One week before admission the child complained of left earache.

Condition on Admission.—Poorly nourished. Temperature 99.6° F.; pulse-rate 120. Tongue furred. Left ear: Meatus full

of muco-pus; tympanic membrane obscured by granulations. Mastoid not swollen or oedematous; very tender to pressure about 2 cm. behind pinna, which was not displaced. Deafness of middle-ear type. Right ear: Meatus full of muco-pus; tympanic membrane obscured by granulations. Mastoid region normal; deafness of middle-ear type.

Day after Admission (September 2).—Temperature 101° F.; pulse-rate 116.

Operation.—Left radical mastoid performed, with drainage of extra-dural paranasal abscess. The antrum and a few cells in its outer wall contained granulations and offensive pus. The malleus and incus and tympanic membrane had been destroyed by the disease. A track of soft bone led backwards from the antrum into the posterior cranial fossa, where an extra-dural collection of pus along the mesial wall of the lateral sinus was found (streptococci were discovered in films of this pus, together with Gram-negative bacilli; well spread-out cultures yielded only *coli*-form bacilli). The adjacent sinus wall was covered with plastic lymph, but the rest of the sinus was normal and the contents fluctuated freely. The overhanging bone was cut away to the limits of the extra-dural abscess. Panse's plastic operation adopted. Cavity packed lightly with gauze, and wound closed with drainage at lower end. A mass of adenoids, which had caused trouble during anaesthesia, was removed with the curette.

Subsequent Course.—September 10: All went well until this day, when the temperature rose to 103.2° F.; pulse-rate from 100 to 144; slight sore throat, but nothing definite discovered. September 11: Morning temperature fell, but evening temperature rose with rigor to 103° F.; pulse-rate 144. Tenderness noticed in cervical glands left side below angle of jaw; vomited once; cough began, also pain in left side of chest; respirations rose to 42 per minute. September 12: Early morning temperature fell to 100° F., but soon rose to 102° F. Chest: A patch of dulness was discovered on the left side, with breath-sounds weakened and friction rale.

Second Operation (September 12, 5 p.m.).—Ligature of left internal jugular vein. Exposure and drainage of left lateral sinus. The vein was tied at the level of the common facial, above the junction, with which it was found to be collapsed. The wound in the neck was closed by suture. The mastoid wound was re-opened and the lateral sinus fully exposed. This was now found to be more thickly coated with lymph, and no longer yielded to pressure.

The upper limit of the thrombus was soon reached, and a partly disintegrating adherent clot was removed from the sigmoid sinus with curette. The wound was loosely packed with gauze and dry-dressed in the usual way. An exploratory puncture of the chest was made, but no free fluid withdrawn.

Subsequent Course.—The temperature and pulse-rate fell next day with corresponding decrease in respiratory frequency, and the child made an uninterrupted recovery. A month later Mr. West kindly closed the cranial wound by secondary plastic suture.

Comments.—The following points of interest were raised: (1) The necessity for continued caution in prognosis during convalescence after mastoid operation when intra-cranial suppuration exists; (2) the importance of suspecting sinus infection early, when under similar circumstances signs of sepsis arise; (3) the value of exposing the jugular vein before exploring the cranium, thus confirming the diagnosis of thrombosis; (4) as regards the infection, the discovery of streptococci in the films, masking of streptococci in culture by *coli*-form bacilli, and the probability of the former being responsible for the systemic infection; (5) the lung seems able to deal with early metastatic foci when the primary source of infection has been controlled; (6) the routine removal of adenoids during the first operation on the ear.

MR. MARRIAGE remarked that the delay in the lateral sinus disease until ten days after the first operation was noteworthy. He himself had had a similar experience. This was a case in which symptoms like those of cerebellar abscess set in six weeks after the performance of the radical mastoid operation, the wound of which had in the meantime healed up. The patient was again operated on, the lateral sinus being opened. He had found pus in the sinus groove at the first operation, and the vein wall was covered with granulations, but he had not opened the sinus on that occasion, because it was pulsating and seemed to be filled with fluid blood. There was also present a cerebellar abscess, which was felt as a hard lump in the upper part of the wound. This was opened and the case did well. The route of infection was not clear; it did not appear to be through the bone.

Dr. H. J. DAVIS, referring to the removal of adenoids at the same time as the operation upon the ear, thought at first that this might have accounted for the pulmonary disease. He had experienced bad effects from the practice. In one case pleurisy developed, in a second tracheotomy had to be performed, and in a third acute otitis was set up in the other ear. It had been observed also, in his cases, that when adenoids were removed at the time of the ear operation the convalescence was delayed. He therefore was now in the habit of postponing the adenoid operation.

Dr. MILLIGAN asked whether there was not present in this and similar cases a mural thrombus in the vein at the time of the first operation. Again, when there is streptococcus infection and trouble around

the sinus, should not the sinus be punctured with a hypodermic needle and the blood examined?

Mr. WAGGETT remarked that mural thrombosis was difficult to diagnose, and related a case in illustration, in which rigors and fever persisted after operating on the ear, and did not disappear until the sinus was opened. Examination of the blood was unsatisfactory.

Mr. WEST practised removal of adenoids at the time of the ear operation, just as Mr. Scott did, and he had never seen any evil resulting therefrom. His experience had been that the convalescence was hastened by their removal. Pleurisy might be due to the general infection rather than to the adenoid operation, and the occurrence of acute purulent otitis was not uncommon after removing adenoids in otherwise healthy children. To remove adenoids at the time of operating on the ear had the advantage of avoiding the risks of a second operation.

Dr. JOBSON HORNE argued that the removal of adenoids necessarily increased the area exposed to infection. In a discussion upon acute suppuration of the ear at a meeting of the British Medical Association, it was stated that adenoids were frequently removed during the course of the infectious fevers with the object of preventing mastoid complications.

Dr. WATSON WILLIAMS advised the use of anti-streptococcus serum or vaccine in streptococcal cases in which adenoids were removed.

Mr. S. SCOTT, in reply, thought that adenoids should always be removed when they were causing symptoms. The possibility of the presence of mural thrombosis in this case at the time of the first operation was negated by the fact that the chart showed no pyrexia until ten days later. He would not advise puncturing the lateral sinus when there was pus in the groove unless the general symptoms were such as to raise the suspicion of sinus infection. He had seen a case in which mural thrombosis was almost healed, the patient dying of malignant endocarditis secondary to the sinus infection. Anti-streptococcus serum was useful if the symptoms were those of general infection.

A CASE OF RETRO-CEREBELLAR ABSCESS; AUTOPSY.

By MR. S. SCOTT.

H—, male, aged thirty-two, was first seen at St. Bartholomew's Hospital on August 22, 1910, to which he was admitted under the care of Mr. Scott.

History.—The limited mastoid operation (of Schwartze) had been performed in 1900 by the late Mr. John Langton. The ear had given no trouble to speak of until about a month or more before admission. During the last two weeks the patient had complained of persistent headache, and was said to have shivered once or twice, and had vomited once; there was difficulty in walking, with tendency to fall backwards.

Condition on Admission.—There was a mastoid scar of the previous operation on the left side. The tympanic membrane was perforated posteriorly; no granulations visible. The tuning-fork tests pointed to middle-ear disease on the left side; the right ear

was normal. The patient complained of pain in the occipital region and above the left ear, where there was great tenderness to pressure, but no swelling or œdema; the mental state was clear; no amnesia. Attitude of head: Slight retraction, with chin turned toward the right shoulder. Kernig's sign was well marked; no nystagmus on deviation; no muscular hypotonia in limbs; inco-ordination was discovered by the finger-to-nose test; it was impossible to say on which side the inco-ordination was more marked; all superficial and deep reflexes were obtained. Lumbar puncture yielded fluid under hyper-tension; this was cloudy, and afterwards proved to be sterile.

Operation.—The left mastoid was opened up in the usual way through a post-aural incision. The antrum and a few outer accessory cells contained granulations and pus, and a soft wide track led backwards through softened bone into the posterior fossa. An extra-dural abscess was found situated in Whitehead's area. The lateral sinus was exposed and was seen to be dense and fibrous; it was not opened. A considerable area of bone was cut away below and behind the sinus to give relief to the intra-cranial pressure. The incus was dislocated and removed, but the malleus and the tympanic membrane were undisturbed. The wound was left widely open and lightly packed.

August 23: Patient no better; headache somewhat relieved, but temperature rose from 100° to 102° F.; pulse-rate 80 to 76.

August 24: Patient not so well and inclined to drowsiness. Eyes: Optic neuritis plainly seen in both eyes, being more marked in the left than the right; conjugate deviation of the eyes to the right; nystagmus produced by attentive fixation to the left, with a wide horizontal excursion and sluggish movement. There was no giddiness. The inco-ordination (finger-to-nose test) was still present on both sides, but was more advanced on the left side. Dysdiadokokinesia was also now evident on the left side. The patient felt weaker in the left hand than in the right, and hyptonia was discovered in the extensors of the left forearm. All reflexes unchanged.

Second Operation.—Exploratory puncture of cerebellum, Whitehead's area: several punctures to a depth of 3 cm. in the region usually found to be the seat of cerebellar abscess revealed no pus. Further decompression permitted by removal of part of occipital bone. Pulse-rate rose from 68 to 120 after escape of cerebro-spinal fluid. The house-surgeon was instructed to have instruments ready to transfix the left lobe of the cerebellum should the

breathing become embarrassed, but it was hoped the decompression would be sufficient until the seat of pus was revealed. Some four hours later the patient stopped breathing, and Mr. Pretty (house-surgeon) incised the cerebellum as directed from Whitehead's area as far back as the occiput and let out a small quantity of thick pus. Unfortunately artificial respiration proved of no avail.

Autopsy (August 25, 1.30 p.m.).—Complete examination permitted. All organs congested, otherwise no metastasia or disease discovered apart from the head. Head: Disease restricted to the left temporal bone and posterior cranial fossa. Left sigmoid sinus completely occluded by fibrous tissue for nearly 1.5 cm. Cerebellum contained no pus. Intra-dural space: A circumscribed abscess was found on the postero-inferior surface of the left lobe of the cerebellum, close to the mesial plane, but not directly involving the vermis. The occipital bone was normal. A narrow track of adhesions in the great horizontal fissure of the cerebellum was the only evidence of a path of infection from the parasinuous region to the retro-cerebellar abscess. The abscess had been opened by Mr. Pretty's trans-cerebellar incision. Death appeared to be due to compression from spreading œdema in the roof and side of the fourth ventricle. The other parts of the cranium, including the right temporal bone and labyrinth, were normal.

Summary of Principal Points.—(1) Latent mastoid disease. Formation of extra-dural parasinuous abscess, followed by remote retro-cerebellar intra-dural abscess. (2) Headache, hyper-tension of cerebro-spinal fluid and Kernig's sign. (3) Cerebellar attitude of head, triple displacement. (4) Bilateral equal muscular inco-ordination, with unequal inco-ordination (increased on left side) after decompression. (5) Absence of nystagmus, of hypotonia, and of dysdiadokokinesia until cerebellum was decompressed. (6) After decompression, conjugate deviation of the eyes to the contra-lateral side, with nystagmus of cerebellar type, induced by looking to ipsilateral side. (7) Path of infection along great horizontal fissure of cerebellum. (8) Procedure suggested by this case when no abscess found in usual situation. Justification for adopting alternate or occipital route.

Dr. JOBSON HORNE asked the meaning of the term "dysdiadokokinesia." He remarked that this type of abscess, formerly known as the "oyster abscess," was frequently overlooked.

Dr. MILLIGAN said that death from cerebellar pressure might either be respiratory or cardiac, and asked whether any effort had been made to distinguish the type in this case.

Mr. SIDNEY SCOTT, in reply, said that "dysdiadokoknesia" was the term applied to the difficulty of pronating and supinating the forearm smoothly and rapidly. It was a not infrequent accompaniment of cerebellar lesions. With regard to the immediate cause of death he thought it important to lay stress upon the respiratory type, so that house-surgeons might be encouraged to proceed at once to perform artificial respiration in the event of apparent death. He had been interested in the extracerebellar spread of the infection shown in this case.

INFILTRATION OF BOTH AURICLES (? CHRONIC LYMPHANGITIS) IN A
WOMAN AGED THIRTY-TWO.

BY DR. DAN MCKENZIE.

Both auricles had been thickened for many years. The thickening was subcutaneous, and was of the nature of solid œdema. It was most marked in the conchæ, which presented a rounded bulging in place of the normal concavity. The skin here and elsewhere over the auricles was thick and coarse, but did not show any tendency to exude moisture or serous discharge, save perhaps in the meatus. The lining of both meatuses shares in the process, and it had never been possible to see the membranes. Whether or not there was any middle-ear suppuration was not quite settled; the exhibitor thought there was none. The case had been obstinate to treatment. A rich variety of ointments, lotions, and other reputable anti-eczematous remedies had been tried, but to no purpose. A vaccine was prepared from the moisture in the depths of the meatus and injected subcutaneously, with the peculiar result that certain fleeting attacks of local cutaneous inflammation had ceased to appear. With the idea of draining the waterlogged conchæ a small bundle of horsehair sutures was threaded in at the concha, led by means of a needle from the concha to the adjoining region of the cheek, and left *in situ*. The horsehair was still there, but this measure of lymphangioplasty had had no very decided effect upon the auricles. Lately, considerable improvement had followed the daily application of hydrogen peroxide, followed by alcohol, and then by 5 per cent. argent. nit. in aq.

The exhibitor believed that the essential pathology of a condition such as this is the blockage of efferent lymph-vessels by the products of an inflammatory agent—such as that which induces erysipelas. The evanescent attacks of cutaneous redness and swelling to which the patient had been formerly subject supported this view. He did not favour the application of the term "eczema."

The PRESIDENT agreed that these cases should not be called eczema, as the process was a chronic infection of the subcutaneous tissues. It began in the meatus; the posterior aspect of the auricle was usually free. They were generally obstinate cases.

Mr. WEST asked what organism had been found in the cultures.

Dr. W. H. KELSON had shown a similar case before the Section two years ago, and most of the Fellows had thought it to be ordinary eczema. After treating it for a long time with anti-eczematous remedies, he had removed a large segment of the posterior meatal wall, with excellent effect.

Dr. DAN MCKENZIE, in reply, said that he thought that the organism found in the culture was the *Staphylococcus albus*. This organism was so frequently found on the normal skin that he was inclined to doubt its pathogenicity in this case. He thought that Dr. Kelson's mode of treatment was worthy of imitation, but the present case had recently improved.

A CASE OF CHRONIC DERMATITIS OF THE PINNA ASSOCIATED WITH INFECTION BY STAPHYLOCOCCUS AUREUS, UNDER TREATMENT BY VACCINE.

BY MR. C. E. WEST.

The PRESIDENT asked how long the case had been under treatment by vaccines.

Mr. WEST replied that the case had been very chronic; ichthyol, calamine, lead and other remedies had been tried without any improvement. During the last four weeks vaccine treatment had been tried and great improvement had followed.

A CASE OF CHRONIC INFECTIVE LABYRINTHITIS.

BY MR. C. E. WEST.

Female, aged twenty-three (?). Right chronic discharge since early childhood. First seen on September 29, 1910. Right facial paralysis for about a week; total right deafness and loss of thermal excitability; marked asymmetry between reaction to rotation on right and left sides; tympanum full of granulations. Diagnosis: Chronic infective labyrinthitis. Operation, October 5: Radica mastoid; posterior part of promontory and anapullary parts of external and superior canals replaced by sprouting masses of granulations; facial nerve absolutely isolated from bony support. Double vestibulotomy. Present condition: Ear nearly dry; total deafness remains; some slight improvement in condition of face.

In reply to the President, Mr. WEST said that the mastoid was of the infantile type; there were no cells.

THE BRAIN OF A PATIENT WHO HAD DIED FROM CEREBELLAR ABSCESS ;
OPERATION FOR NASAL POLYPI ; ACUTE OTITIS MEDIA ; RADICAL
MASTOID OPERATION ; CEREBELLAR ABSCESS OPENED, FOLLOWED
AFTER TWENTY-SIX DAYS BY DEATH.

BY DR. W. H. KELSON.

L. A——, female, aged forty-three, was operated on in hospital on February 2, 1910, for nasal polypi, and returned home on February 5. Left-sided acute otitis media, February 7. Had had middle-ear suppuration as a child, but not recently. March 1, readmitted to hospital ; temperature 100.5° F., pulse 78 ; wasted ; drowsy (could be roused, but seemed horribly bored thereby). Complained of giddiness, and repeatedly said that she thought she was falling out of bed. Left pupil larger than right ; both reacted to light and accommodation ; coarse, slow nystagmus seen to the left on one occasion. Pus and granulation seen at bottom of left auditory meatus. Speaking voice heard at 1 ft. on this side. Rinne negative.

Knee-jerk more marked on left than right side. The patient vomited several times, both before and after entering the hospital ; complained both of occipital and frontal pain. She preferred to lie in a flexed position on her right side. Obstinate constipation was present. On syringing the left ear with cold sterilised water a normal vestibular reaction was obtained. The limbs on the left side seemed weaker and more flaccid than on the right.

The following, though carefully examined for, were never observed—viz., optic neuritis, paralysis of third, fourth, sixth, or other cranial nerves, conjugate or skew deviation, ankle clonus, extensor plantar reflex, dysdiadokokinesis.

Mr. Hunter Tod and Mr. C. E. West, who had seen the case, were agreed on the probability of an intra-cranial abscess, and the latter strongly advised examination of the cerebellum first. This was done on March 3 by the inner route, and an abscess containing about $1\frac{1}{2}$ oz. (estimated) of pus tapped at once in the left hemisphere ; this was found to contain streptococci. Patient was very much better the next day, but considerable difficulty was found subsequently in keeping up satisfactory drainage. She gained flesh, however, and seemed to be slowly progressing, but her strength failed, and, respiration becoming embarrassed, she died on March 28. The brain shows the site of the abscess surrounded by œdema, and a small lesion (? abscess) on the dorsal surface of the left hemisphere of the cerebellum.

The PRESIDENT said that the case opened up the question of the drainage of brain abscess. He asked what type of bone was present.

Dr. KELSON had found the bone very hard.

LARGE TUBERCULAR POLYP REMOVED FROM THE MIDDLE EAR OF AN
INFANT AGED SEVEN MONTHS; MICROSCOPICAL SPECIMEN.

BY MR. H. J. MARRIAGE.

Patient at the age of three months developed otorrhœa on the left side, a polypus appearing two months later. This was removed under chloroform by the local practitioner, but recurred. When seen by me for the first time on January 5, 1909, the child being then seven months old, there was a profuse discharge from the ear, and a polyp which filled up the tympanum and projected into the meatus. On pressure over the mastoid antrum there was apparently slight tenderness, but no redness or œdema. A few small glands were felt on the left side of the neck, but child otherwise healthy. The child had been fed by the bottle; no history of tubercle on either side of the family. Radical mastoid operation performed; the antrum was filled with liquid and inspissated pus and granulations, diseased bone gonged away, a mere shell of bone being left. The tympanum was about three times its natural size, and growing from the floor and internal wall was a large polyp the size of a cherry; this was removed and smaller granulations scraped away. The child bore the operation well and had no bad symptoms. Twelve days after operation an injection of tuberculin given, followed by two more injections at intervals of ten days.

At the end of three months the cavity was healed except for a small area near the opening of the Eustachian tube. In the middle of March, 1909, tubercular dactylitis of proximal phalanx of both index fingers appeared, with also slight involvement of the second metacarpal bone of the right hand. Under treatment by strapping the trouble completely subsided in about three months. In June, 1909, enlarged tuberculous glands removed from left side of neck.

Child has grown into a fine sturdy boy, but from time to time still gets very slight discharge from the upper part of the Eustachian tube.

Dr. L. S. Dudgeon examined a section of the polyp microscopically and reported: "I think the sections represent the best specimen of tubercle I have ever seen."

Mr. WEST asked what structures had been destroyed by the very extensive dilatation of the middle-ear cavity.

Dr. JOHNSON HORNE remarked that, judging by museum specimens, extensive dilatation of the tympanum of this kind were not uncommon. The occurrence of tubercular dactylitis favoured his idea that middle-ear tuberculosis had its origin in the bone.

Mr. WESTMACOTT asked if any change had been observed in the glands after the operation on the ear. In his own cases he had observed an arrest in the glandular disease after the ear had been cleared out, even when the glands had broken down and had begun to involve the skin.

The PRESIDENT had shown microscopic specimens of tuberculosis of the middle ear in which the origin of the disease in the mucous membrane was plainly evident.

Mr. MARRIAGE, in reply, said that the tympanic cavity had been distended in every direction. In this case the disease had probably commenced in the bone of the antrum. The glands were quite small at the time of the operation and got larger afterwards, breaking down some three months later, when they were removed.

PROCEEDINGS OF THE GERMAN OTOLOGICAL SOCIETY.

Nineteenth Meeting, Dresden, May, 1910; Monats. f. Ohren., year 44, No. 6.

HERR SCHWABACH *in the Chair.*

Abstract of Proceedings.

FROM the large number of demonstrations, etc., the following are selected as being of especial interest:

A NEW METHOD OF PROVING THE SIMULATION OF DEAFNESS.

BY R. BÁRÁNY.

If a person with normal hearing, whilst reading aloud, has a noise-apparatus inserted in each ear he involuntarily at once raises his voice, and without being aware that he has done so. In cases of one-sided deafness it is only necessary to apply the apparatus to the sound ear in order to elicit a similar result. If one-sided deafness is simulated the insertion of the apparatus in the sound ear causes no alteration in the voice. In cases where deafness on both sides is simulated the voice will be raised, whilst if the deafness be genuine no alteration will take place during this test.

ON THE USE OF CERTAIN WORDS IN TESTING THE HEARING.

BY R. BÁRÁNY.

The method in use at present for testing the range of hearing by conversation, voice, and whisper admit of certain errors which

may be eliminated by the adoption of words differing only slightly from one another—*e.g.* chair, stair, bear, fair, hair, care, etc., and in this way greater accuracy may be obtained.

THE RELATIONSHIP OF THE CEREBELLUM TO THE VESTIBULAR APPARATUS.

By R. BÁRÁNY.

Ataxia, dependent on disease of the vestibules, at first sight would not appear separable from that due to lesions of the cerebellum. More accurate investigation, however, reveals that in ataxia caused by labyrinthitis the position of the head plays an important part, which does not occur in cerebellar ataxia. For these reasons, and also on physiological and anatomical grounds, Bárány would refer the vestibular reaction movements of the head to Deiter's nucleus, and the reaction movements of the remainder of the body to the cerebellar cortex. He suggests that accurate investigation into the condition of the vestibular apparatus should be carried out in all cases of supposed cerebellar disease, as these reaction movements are influenced even in the early stages of such lesions.

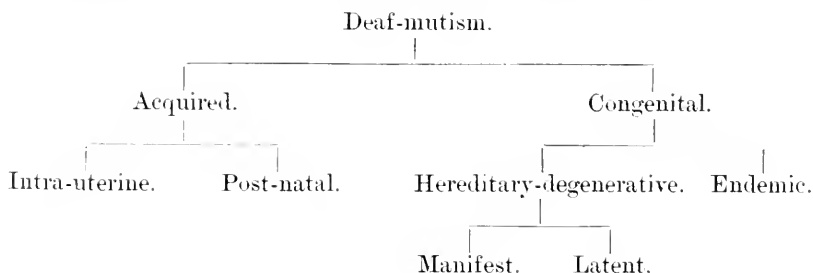
ON THE ÆTIOLOGY OF DEAF-MUTISM.

By ERNST URBANTSCHITSCH.

The author divides this condition into two groups—the acquired and the congenital, the former of which may originate in either intra- or post-uterine life, and includes the various manifestations of hereditary lues. One hundred and twenty-five deaf-mutes, as well as some of their relatives, were examined with the Wassermann reaction, with the following result: Negative or only weak reaction, 86·4 per cent.; partial reaction, 6·4 per cent.; complete or almost complete reaction, 7·2 per cent. The author regards all those cases, in which the source of their disability is traceable to embryonic life, as falling into the category of “hereditary-degenerative deaf-mutism,” though the symptoms may be manifest at once or remain latent, until some severe intercurrent disease, such as syphilis or tuberculosis, may disclose the degenerative character of a family by lighting up this latent condition.

Consanguinity of the parents has only a very slight relationship to deaf-mutism, though it may play a part in its production if they come of a “degenerative” family.

In conclusion Urbantschitsch offers the following scheme as an explanation for the various classes of deaf-mutism:



ON THE INFLUENCE OF THE POSITION OF THE HEAD ON AURAL SECRETIONS.

BY ERNST URBANTSCHITSCH.

From a large series of investigations (the paper is published in full in the current number) the author has arrived at the following practical conclusions:

That the ordinary aural "bougies" are useless unless the patient lies on the opposite side for at least forty-five minutes. That "bougies" containing 12 per cent. gelatine are of no medicinal value at all. That fluids (*e.g.* pus, etc.) collect in the mastoid cells more easily when the patient lies on the sound side. The discovery of cerumen in one ear alone points to the fact that the patient usually sleeps on the opposite side, or, if it is found in both ears, that he sleeps on both sides equally; less often on the back. That in many cases of acute middle-ear inflammation the process may be influenced beneficially by keeping the patient lying constantly on the same side.

ON THE PATHOLOGY OF DEAF-MUTISM.

BY E. RUTIN.

The author showed some preparations of the labyrinth of an albino deaf dog, in which the organ of Corti was absent and the aqueductus cochleae filled with fibrous tissue, probably representing the remains of embryonic fibrous tissue. The vestibular apparatus was normal. The case was more interesting as functional tests had been carried out beforehand. If the vestibular apparatus, in spite of the stenosis of the aqueductus cochleae, can be normal, it is obvious that the perilymph is not necessary for its functional condition.

According to Helmholtz, a certain compressibility of the

labyrinth fluid must exist for the proper functioning of the cochlea. This, however, only applies to the perilymph, as the endolymph is completely enclosed, especially if one accepts Schönemann's view that the ductus rennienus is not normally patent. Thus it would appear that the perilymph is all-important to the cochlea, whilst the integrity of the vestibular apparatus depends on the endolymph. This forms the solution of an important pathological condition. In serous labyrinthitis it is the function of the cochlea which is first affected; there are, however, cases of this disease in which both the cochlea and the vestibular apparatus are completely functionless, but no cases are met with in which the latter is injured whilst the power of hearing remains intact. This greater susceptibility of the cochlea has before, indeed, been demonstrated.¹

Ruttin offered as an explanation of these phenomena that every labyrinth inflammation at first occurred in that part of the perilymphatic space lying immediately contiguous to the primary middle-ear disease, and thus the medium important for the functioning of the cochlea was first involved, and then later, as the endolymph became affected also, the faculty of the vestibular apparatus was destroyed.

So that given a case of serous labyrinthitis with the hearing affected alone, the condition might be regarded as one of perilymphitis, whereas if the vestibular apparatus were also involved one had to deal with an inflammation of the endolymph, which had been preceded by, and was co-existent with, a serous perilymphitis.

ALEX. R. TWEEDIE (*trans.*).

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Meeting, 1910.

(Continued from p. 599.)

RESULTS OF VACCINE THERAPY IN CHRONIC SUPPURATIVE EARS.

BY DR. E. W. NAGLE.

Forty cases had been treated by this method.

The pus employed in making the vaccines was forced out into

¹ Cf. JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1909, p. 702, 1910, p. 94.

the antral canal from the Eustachian tube by catheterising, the canal having previously been cleansed. This discharge was smeared over the surface of the culture tubes, and these tubes were then incubated at the temperature of 37° C., until the growth had nearly reached its height. The time of incubation varies according to the rapidity of the growth of the bacteria. When the height of the growth is reached it is washed down into the bottom of the tube, off the surface of the media, with normal saline solution under sterile conditions and collected in one tube. The tube is then sealed with the blow-pipe and subjected to the lowest degree of heat for the shortest period that was possible to kill the organisms. The vaccine was then tested to see if it was sterile. In staphylococcus vaccine 600,000,000 bacteria were put into every cubic centimetre of the vaccine, while vaccine made from other organisms contained only 100,000,000 bacteria to the cubic centimetre. The vaccine was sealed in sterile bottles holding 50 c.cm. It is quite essential to have an active vaccine. The activity depends on getting a virulent type of bacteria, on killing them at the right time, before they begin to lose their characteristics, and on subjecting them to the lowest degree of heat for the shortest possible time necessary to kill the bacteria. The injections were always given in the arm, alternating left and right, just above the elbow close to the skin. The best results were obtained by giving the injections at intervals of three days, and insisting that the patients should not miss a treatment. The beginning dose was usually a small one, a quarter of a cubic centimetre, 150,000,000 bacteria in the case of staphylococcus vaccine, increasing to a half, two thirds, and then to a full cubic centimetre, continuing with this dose. Sometimes the dose was increased to two cubic centimetres before there was improvement. The opsonic index was not taken in any of the cases, dependence being placed entirely upon clinical symptoms. No complications or ill-effects occurred. After the first and sometimes the second dose of vaccine the patients complained of malaise, of a slight headache, and a few times of nausea, with a feeling of depression. This was followed in about twelve hours by a sense of exhilaration, lasting about two and a half days, and this was followed by depression. The injection is timed so as to come as the sense of exhilaration is wearing off, and the depression is appearing. Six injections are usually given after the ear is dry.

Of the forty cases treated, in six the discharge had been present several months, but they had resisted all the usual methods

of treatment. In the other thirty-four cases the ears had been discharging from one to forty years. In only one case did the vaccine fail to cure the discharge, the cause of the failure being unknown. Some of the cases were treated as long ago as a year and nine months. The bacteria found in the discharge from the ears were staphylococci, a coccus in pairs, a bacillus of the *proteus* type, an influenza-like bacillus, and a number of other kinds of bacteria which were not classified. Some of the cases were of mixed infection.

Dr. FREDERIC E. SONDERN thought Dr. Nagle very wise in the rules laid down concerning the making of autogenous vaccines, and agreed with her that these may be harmed by prolonged exposure to unnecessary high temperature. It has been interesting to note that a vaccine made by one person may not prove as efficacious as that made by another, and the method of sterilising may explain this. It is also well not to keep the cultures too long, and fresh ones should be prepared every few weeks if the treatment is continued that long. The type of organism has a good deal to do with the outcome of vaccine therapy. It is to be regretted that the opsonic index determination has been found inconstant and not practical by expert workers, for it would help to solve the problems of size and frequency of administration. The successful application of vaccine therapy depends in a great measure upon the acuteness of the user in determining not only the dose, but particularly the time when the next injection should be given, as in any other therapeutic measure which must vary not only in different patients but also in different types of infection. Dr. Nagle's minute description of the clinical picture noted in the cases during treatment is an indication of the careful observation that is necessary, and doubtless explains in a great measure the successful results obtained. It would seem reasonable to explain the coming away of sequestra during vaccine treatment by the fact that the surrounding inflammatory lesion subsides, and thus allows the dead bone to drop out. Instances have been reported in which vaccine therapy has given good results in cases of acute systemic infection. The present theory on which this form of treatment is based would indicate its usefulness in chronic lesions only, and if it is found useful in acute systemic infections a change in the theory will be necessary.

Dr. B. R. SHURLY had found vaccine therapy of very little help in his work in the accessory sinuses, and in *pyogenicus* infection absolutely useless. Its chief field of usefulness is in staphylococcus infection. The polyvalent vaccine, where fifteen to seventeen selected strains are used, is one of the most effective of the stock vaccines. In many cases of staphylococcus infection the stock vaccine is useful. It can be employed in cases where operative interference is declined. Accuracy in dosage should be emphasised. He had witnessed a case in which six times the proper dose was given, and in which, in a few minutes, there was tremendous shock, almost causing death.

Dr. EDGAR M. HOLMES had tried the vaccine method at the City Hospital, both the stock and the autogenous vaccine being used, but without very satisfactory results. The injections were made once a week as a rule, sometimes more frequently. One reason, perhaps, why the vaccines are effective in the ear and not in the nose and sinuses is because

the ear offers very little space for absorption, whereas in the other region there is so much absorption that it requires a tremendous dose to be effective at all. He asked if it would be justifiable, after the report presented, in cases of known necrosis, in polyps, and in mastoid complications, where there was a previous discharge, to wait, and if to wait, how long should the vaccine be used before resorting to other measures.

Dr. EWING W. DAY had used the streptococcic vaccine in acute cases in six instances with very gratifying results. The first patient was himself, the condition for which the vaccine was used being a streptococcic infection arising from a small pimple on the finger, and extending up the arm to the glands in the axilla. A vaccine taken from a patient in the hospital who was suffering from streptococcic infection was employed, with immediate success. A week later he had under observation a patient who presented all the symptoms of an acute mastoiditis, with streptococci found in the cerebro-spinal fluid. The polymorphonuclear count was 95 per cent. The vaccine made from the speaker's finger was used, and another lumbar puncture was made, and the anti-streptococcic serum injected into the spinal canal. After that the vaccine was used every second day. The case showed a slow and steady improvement, but recovery was slow, extending over three or four weeks. The next case was given mixed treatment of subdural drainage and vaccine, the vaccine being taken from the cerebro-spinal fluid. This patient recovered in about three weeks. The fourth case, also one of acute mastoiditis, was still under treatment in the hospital. At the time of operation was suffering from acute suppuration in the finger and also sinus thrombosis. A blood-culture was made, and a pure streptococcus growth obtained. Injections had been made at intervals of from two to five days. The temperature had varied from normal to 99-101.5° F., and the condition was clearing up.

Dr. HALSTED S. HEDGES mentioned a case of serous meningitis, with exposure of the meninges, in which the staphylococcus vaccine had been used during the acute stage, with steady improvement in the patient's condition. Extensive exposure of the meninges was made ten days after the primary mastoid operation.

Dr. KITTRIDGE cited a case of sepsis following an operation for deflected septum with removal of the anterior portion of the middle turbinate treated by the use of an autogenous serum. A few injections were used and the patient finally recovered.

Dr. JOHN H. ALLEN said that in order to form an intelligent opinion of the value of the use of vaccines in chronic suppuration of the middle ear one should know the exact conditions of the ears treated. It was, of course, of material difference whether there was simply swelling of the mucous membrane or a tubal catarrh, or whether there was an attic suppuration, with caries or cholesteatoma.

Dr. FREDERICK C. COBB was not sure whether the results were permanent, nor is it claimed by Dr. Nagle that they will be so. Recurrence in the ear may possibly take place later. Whether the cure is to be permanent or not, the method is of great importance and should certainly be tried. Ear cases, for some reason, do better than the nose cases, probably because it is much easier to obtain from the former a pure culture, while it is difficult to sterilise the latter, owing to the millions of bacteria on the hairs in the nose.

Dr. NAGLE said the stock vaccines had not given satisfactory results. She had failed in some way to obtain good results in nose cases. She had not made a vaccine in *pyocyanus* cases, having considered these

as secondary infections. Much of the success of the method depends upon how the vaccines are made, how the bacteria are killed, the length of time, etc., and upon having an active vaccine. The method had not been tried by her in acute cases. She had had only one case in which there was a discharge from the attic. The patient did well under the vaccine treatment for a time, then moved away, the subsequent history being unknown. During the vaccine treatment none of the cases had received any other treatment than cleansing measures.

SOME LABORATORY AIDS TO OTOLOGICAL DIAGNOSIS.

By DR. FREDERIC E. SONDERN.

The usefulness of the differential leucocyte count, the added significance it gives to the leucocyte count itself, and the value of the ratio between the two have been accepted as important aids in the diagnosis of inflammatory lesions. Their application in acute middle-ear disease and its complications has proved to be of diagnostic and prognostic value. Inflammatory lesions confined to cellular bone structures do not show as high leucocytosis or relative polynucleosis as noted when soft parts are involved, but the disproportion between the two is present as shown by the resistance line in the majority of cases. The relation between leucocytosis and polynucleosis, or the resistance line, constitutes the most important feature of the method. Suppurative processes of the mucous membranes, pyogenic infections mixed with tuberculosis, typhoid fever or measles, or following these diseases, show relatively low figures. When purulent exudates are confined in dense pyogenic membrane and toxic absorption is prevented, or when they are the result of organisms which do not produce leucocytosis or relative polynucleosis, the absence of these changes is explained. The exact bacterial nature of the infection also has a bearing on the degree of leucocytosis and relative polynucleosis. With the exercise of every precaution a relatively small number of cases is met with in which the examination does not reflect the true condition. This occurs usually with patients much reduced in vitality. After the leucocyte count and polynuclear percentage have been determined, the resistance line should be drawn upon the chart devised for the purpose. Repeated examinations are essential if the desired information is to be obtained. A horizontal or falling resistance line means good leucocytosis and relatively moderate polynucleosis; the higher in the scale the greater the severity; an ascending resistance line means insufficient leucocytosis and relatively pronounced polynucleosis; the longer the

line and the higher in the scale, the greater the severity, the poorer the resistance, and the poorer the prognosis.

The introduction of comparatively simple apparatus for sufficiently accurate determination of the viscosity of the blood promises an additional clinical laboratory help in diagnosis. It is claimed that the viscosity normally increases during the first day after operation; it then declines to normal in three days, is subnormal for two days, and then returns to normal. It is abnormally high in acute inflammatory lesions, and sudden decline indicates exhaustion. Any focus of inflammation causes increased viscosity of the blood, and rapid and regular post-operative decline indicates freedom from complications. It is also claimed that the change in the viscosity of the blood is one of the first signs of cardiac insufficiency. Much additional investigation is necessary before this method can become of practical use to the clinician.

The examination of aural discharges should include a bacteriological and cytological investigation. Bacterial examination may be made by means of stained smears of the discharge and by culture on suitable media. Cultures from aural discharge allow a more accurate determination of the bacterial content than do smears, but because of the number of organisms found in aural discharge, which it is difficult to demonstrate quickly on culture, it is advisable to use both methods.

The blood-culture is of particular diagnostic value in the complication of otitis media, owing to the frequency and significance of bacteræmia. A critical study of the opinions of different observers, as well as personal experience, with reference to the invariable absence of a bacteræmia in cases of otitis media with mastoid involvement and without sinus thrombosis, would indicate that this is still an open question.

If the present theory, that when the opsonic value of the blood is reduced it can be brought to normal or above by the injection of a bacterial vaccine, is correct, an ascending resistance line found on blood examination, and particularly the demonstration of a bacteræmia, should contra-indicate the use of vaccines.

DR. ARTHUR B. DUEL said that in the majority of instances invaluable information is obtained from the smear, but it must be borne in mind that a mere smear may be misleading. If the smear is positive as to streptococcus infection one may be sure that it is a more virulent infection than if the staphylococcus is found. Dr. Sondern had called attention to the fact that in a small percentage of cases the blood-count does not reflect the true condition of the patient, this being the result, in the majority of cases, of the reduced vitality of the patient. It should be emphasised in

this connection that it is important to begin early to make the blood examinations in order to have a basis for comparison as to the future condition of the patient. Recent investigations tended to show that the use of chloroform as an anæsthetic in cases where the streptococcus is present is apt to set up a destructive process in the liver; therefore, if examination of the pus reveals the presence of streptococcus, some other anæsthetic should be employed.

Dr. EDWARD B. DENCH said he had attempted to confirm Dr. Sondern's findings by observing a series of cases extending over a period of more than a year, both in private and hospital practice. The result of these observations confirmed the remarks made by Dr. Sondern—that the laboratory findings are simply aids to clinical diagnosis. In a suspicious case of otitis media a high polymorphonuclear count is a sign of the presence of pus, and, with sufficient clinical symptoms, is an indication for operation upon the mastoid. The absence of a high polymorphonuclear count, however, is no contra-indication for operation if the clinical symptoms are present. In his own experience he had operated upon many mastoids in which the polymorphonuclear count was low, and in spite of this negative report so far as the blood was concerned he had found pus in the mastoid. While the differential blood-count is a very important aid it must not be relied upon too much. In one or two cases, if he had relied upon the blood-count as an indication for operation he would have committed an error. One case cited was that of a nervous child suffering from a double otitis, in which the infection was streptococcus. There was a high polymorphonuclear count, with some mastoid tenderness, although this latter sign could not be definitely determined on account of the nervousness of the child. While still in doubt as to whether or not to operate a central pneumonia was discovered, and this central pneumonia was the cause of the high polymorphonuclear count. In another case, one of double sinus thrombosis, with extension to both jugular veins, the polymorphonuclear count never rose above 70 per cent. Later in the history of the case suppuration of the supra-clavicular glands developed, and as soon as this infection of the glandular structures occurred the polymorphonuclear percentage rose to over 80. In a case of cerebellar abscess the polymorphonuclear count never rose above 70 per cent., although the abscess was discovered at the time of operation. Where the evidence from the differential blood-count is positive it may be valuable, although great attention must be given to a thorough investigation of all other organs in order to exclude any involvement of the viscera, such as lungs, liver, and so forth, before deciding to operate upon a case without definite clinical symptoms—simply upon the blood-count alone. The fact that the differential blood-count is negative—that is, that the polymorphonuclear percentage does not rise above 80 per cent.—is absolutely of no value in excluding the presence of a suppurative process within the mastoid.

Dr. PERCY FRIDENBERG emphasised the diagnostic importance of blood-cultures and the recognition of the presence of bacteræmia. Any method which gives a gain of half a day in making the diagnosis of sinus thrombosis is important, and such a method is the blood-culture. In this, as in other laboratory examinations, a single negative finding means nothing, as a single negative smear would mean nothing in the search for tubercle bacilli. If repeated examinations are negative, the result may be considered negative and a systemic infection excluded. A single negative finding may mean that few bacilli are entering the blood, or that the

blood can dispose of large numbers of bacteria so rapidly that a number of cultures must be made before the bacteria can be discovered. If, for example, the diagnosis of sinus thrombosis has been made, the mastoid operation has been performed, and free flow has been established, and yet a positive blood-culture is found twenty-four hours after operation, repeated tests giving the same finding or increasing bacteremia, it is proof positive that the source of infection has not been removed. The blood-culture is particularly important as an aid to diagnosis in children. It is a better guide to diagnosis and prognosis than clinical symptoms alone, especially as the temperature in infants and children is, as is known, a very unreliable guide.

Dr. SONDERN, replying to Dr. Dench's remarks with reference to the frequency of streptococcus infection following chloroform anaesthesia, said that any debilitating influence favours an infection of this kind. Chloroform anaesthesia is particularly liable to produce a disturbance of hepatic function with consequent acidosis, and an actual necrosis of the liver may result. It seems natural that such more or less profound intoxications would favour streptococcus infections. The speaker again emphasised the value of the resistance line in the diagnosis and prognosis of inflammatory processes. The leucocytosis or the relative polynucleosis may not show high figures, particularly in cases of mastoid disease, but when considered together, and particularly if the resistance line has been followed from day to day, a clue of diagnostic value is obtained. It should be borne in mind that evidences in the blood of an inflammatory process do not necessarily mean that a middle-ear inflammation has extended to the mastoid. A pneumonia or an abscess in some other part of the body may produce the same change. He cited an illustrative case of appendicitis with leucocytosis of 30,000 and a polynuclear percentage of 90. It soon developed that the blood changes were due to an abscess of the toe and not to the mild attack of catarrhal appendicitis. In reply to the query concerning the *Streptococcus mucosus*, the speaker said the positive diagnosis of this organism is attended with difficulty. Unless the method of Buerger or the more simple one recently described by Rulison, of Roosevelt Hospital, is employed, errors in diagnosis are not uncommon. Blood-cultures offer much valuable information, but while well beyond the experimental stage, there are still a number of points that require further observation and confirmation. Concerning examination of the cerebro-spinal fluid, there is no doubt but what much help is obtained not only in reference to the degree of inflammation, but also by learning which organism is present. Confirmatory cultures should always be made, as in the case of aural discharges.

Abstracts.

NOSE.

Scarlett, Rufus B. (Philadelphia).—*A True Papilloma of the Nasal Septum*. "Laryngoscope," August, 1910, p. 833.

Report of two cases with illustrations and *resumé* of literature.

Dan McKenzie.

Culbert, Wm. Ledlie (New York).—*Report of a Case of Chronic Suppuration of the Antrum of Highmore; Puncture followed by Septic Pemphigus and Death.* "Laryngoscope," August, 1910, p. 824.

The patient was a woman, aged fifty-seven. Right antrum suppuration, for which the cavity was punctured and washed out four times in ten days. At the last puncture the solution returned clear. While under this treatment pemphigus set in, and gradually spread to involve the entire cutaneous and mucous surfaces, ending in death in about five weeks.

Dan McKenzie.

Meyer, A. (Berlin).—*On the Nasal Offshoots of Hypertrophic Naso-Pharyngeal Tonsils.* "Zeitschr. f. Laryngol.," vol. iii, Part III.

While in the great majority of cases adenoid vegetations do not extend to the margin of the choana, and are therefore accessible for removal with the Beckmann curette, the author, two or three times a year, meets with a case in which, after the operation has been carefully carried out, posterior rhinoscopy discloses small remains of adenoid tissue hanging down from the upper edge of each choana. The patients are always either older children or adults with a considerable amount of adenoid tissue in the naso-pharynx. The most pronounced example of the condition was that of a man, aged thirty-five, who had recently undergone an operation for removal of adenoids, but still complained much of nasal obstruction. On posterior rhinoscopy the naso-pharynx was found to be free from adenoid, but masses of the latter were seen filling up most of the space between the septum and middle turbinal. On anterior rhinoscopy, after the application of cocaine and adrenalin, the upper choanal margin and the anterior surface of the body of the sphenoid on both sides were seen to be covered with an irregular swelling, evidently of the nature of adenoid tissue. These masses were easily removed on each side by means of a snare passed through the nose, after which nasal respiration was free. Microscopic examination confirmed the diagnosis of intra-nasal adenoid.

Thomas Guthrie.

Thompson, John A. (Cincinnati).—*A Safe Intra-nasal Method of Opening the Frontal Sinus.* "Laryngoscope," August, 1910, p. 810.

A curved probe is inserted into the frontal sinus, and over it a pointed "rasp" is passed, having a groove upon its back to enable it to slide along the probe. The rasp is pushed up into the sinus in successive jerks so as to bore its way through the bone. After the sinus is opened diseased bone in the anterior ethmoidal region is removed with curettes, forceps, etc. As the probe, etc., remain in position during these proceedings, the mucous membrane of the posterior wall remains uninjured, and there is no danger of damage to the cribriform plate.

Dan McKenzie.

PHARYNX.

Somers, L. S.—*Significance of Edema of the Soft Palate.* "Journ. Amer. Med. Assoc.," September 10, 1910.

The author states that oedema of the uvula may occur as a traumatic lesion from over or improper use of the voice. It is often a prodromal symptom of acute articular rheumatism. In chronic specific infections, as tuberculosis and syphilis, it may occur late, and is significant of grave

local lesions and destruction of tissue. It may be the only symptom of approaching uræmia. It is rare in acute nephritis, but occurs in scarlet fever as a sign of profound intoxication. *Macleod Yearsley.*

Guthrie, Thos.—*A Method of Removing Naso-pharyngeal Fibromata, with two Illustrative Cases.* "Lancet," October 29, 1910.

The author discusses these uncommon growths and the methods of dealing with them by operation. His method is then detailed. It is essentially that advocated by Brady, with the difference that the bony anterior nasal aperture is widened through an intra-nasal instead of an external incision. *Macleod Yearsley*

LARYNX AND TRACHEA.

Blumenfeld, F. (Wiesbaden).—*On the Pathological Anatomy of the Vocal Cords.* "Zeitschr. f. Laryngol.," vol. iii, Part III.

The text for this paper was supplied by a specimen of laryngeal carcinoma removed *post-mortem* from a man who succumbed to an accident prior to operation for the laryngeal disease. The preparation showed a carcinomatous growth corresponding in extent exactly with the entire vocal cord of one side, the boundary of which had apparently not been transgressed.

From a consideration of this and other similar cases the author concludes that carcinoma of the vocal cord grows chiefly in a direction parallel to the long axis of the cord, which it tends to involve completely or to a very large extent before it encroaches on surrounding parts. This characteristic method of growth is due to the arrangement of the sub-mucous lymphatic space of the cord, which forms a closed sac. This sac is bounded above by the linea arcuata superior of Reinke, which separates it from the ventricle of Morgagni, and below by the linea arcuata inferior, which separates it from the lymphatic spaces of the subglottic mucosa. These lineæ arcuatae correspond to the lines of transition from squamous-to cylindrical-celled epithelium.

In virtue of these anatomical conditions, vocal cord carcinoma must be regarded as occupying, from a clinical and therapeutic standpoint, a somewhat exceptional position. This is exemplified by the successful results which have not infrequently followed its removal by endolaryngeal methods. The author would accordingly suggest a classification of laryngeal carcinoma for clinical purposes as follows:

(1) Extrinsic carcinoma, affecting ary-epiglottic folds, interarytænoid area, or pharyngeal wall of larynx.

(2) Intrinsic carcinoma affecting parts of the interior of the larynx other than the vocal cords.

(3) Intrinsic carcinoma limited to one or both vocal cords. In addition to this there would be, of course, a group of more extensive cases, in which the point of origin could no longer be ascertained.

Such a classification would be useful for statistical purposes and for estimating the value of different methods of operation.

Thomas Guthrie.

Citelli (Catania).—*Intubation and Tracheotomy in Acute Laryngeal Stenosis in Children.* "Zeitschr. f. Laryngol.," vol. iii, Part III.

The author belongs to neither of the two groups of those who advocate exclusively either intubation or tracheotomy. It is his practice when

called to see a child suffering from dangerous acute laryngeal obstruction to proceed at once to intubation. If the child can be kept under constant observation and the tube lies well in position, it is allowed to remain for twenty-four hours, after which it is removed. If the obstruction then returns the tube is replaced for another twenty-four hours. If, however, on removal at the end of that time the obstruction again returns, the tube is replaced, but a tracheotomy is at once performed, and is, of course much simplified by the presence of the intubation tube. The latter is then permanently removed, and only employed later if constant dilatation of the laryngeal lumen is required, in which case its lower end is fixed to the tracheotomy tube.

The essential point of the method consists in the combination of intubation and tracheotomy with the object of diminishing the not inconsiderable number of chronic stenoses which follow the employment of either procedure alone. While admitting that the method entails the performance of a certain number of tracheotomies that might have been avoided, the author claims for it the great advantage that it prevents a considerable number of chronic laryngeal stenoses, which are undoubtedly due to irritation of the inflamed mucous membrane by the intubation tube.

Thomas Guthrie.

Chiari, Prof. O.—*A Case of Superior Bronchoscopy which ended Fatally.* "Monats. f. Ohrenh.," Year 44, No. 8.

An undersized boy, aged seven, was admitted to the clinic June 6, 1910, as he was reported to have inhaled a grain of maize three days before. The chest was carefully examined; auscultation afforded no help, but under the X rays a shadow, the size of a bean, was detected at the upper part of the left bronchus. A direct examination was at once undertaken, and, as local anæsthesia was insufficient, Billroth's mixture was given. After some little trouble a foreign body was located in the left bronchus and a portion removed with difficulty. The mucous membrane was much swollen. Suddenly the child stopped breathing, and no pulse could be felt. Tracheotomy, artificial respiration, and various restoratives were ineffectual, although carried out for about one hour. The examination had lasted one hour.

At the autopsy the grain of corn, partially separated from its husk, was found firmly impacted in the left bronchus. A purulent bronchitis had already commenced on the left side.

Chiari attributes the death to the child's debilitated general condition, associated with length of time under manipulation, which the circumstances of the case necessitated, and not to the administration of a general anæsthetic. The extremely firm impaction of the maize also rendered it very improbable that an attempt to remove it by inferior bronchoscopy through a tracheotomy wound, performed to start with, would have been any more successful.

Alex. R. Tweedie.

E.A.R.

Urbantschitsch, V.—*Influence of Otitis Media on Olfactory Perception.* "Monatschr. f. Ohren.," No. 3, 1910.

Many authorities have noted a disturbance of olfactory perception in cases of otitic abscess of the temporal lobe. The author found, in one case, that the disturbance remained after complete healing of the abscess, and investigated as to how far aural inflammations alone imply olfactory

disturbances. Out of thirty cases of unilateral otitis media, twenty-two showed this symptom on the respective side of the nose; in sixteen cases the perceptive power was increased, and in six cases increased in respect of the other nostril.

Macleod Yearsley.

Ryerson, G. S.—*The Pathogenic Influence of the Eye on the Ear.* "Canadian Pract. and Rev.," July, 1909.

The author details two cases in which the irritation of eye disease produced tinnitus. In one with extensive choroidal changes the tinnitus recurred only when the eyes and head ached. In the other it corresponded to the eye chiefly affected.

Macleod Yearsley.

Alexander, G.—*Further Studies as to Labyrinthine Nystagmus elicited by Compression and Aspiration.* "Monats. f. Ohrenh.," Year 44, No. 8.

That there are certain cases which afford the "fistula symptom," although no fistula or any purulent middle-ear disease exist, has prompted the author to publish the following account, as these instances are very rare and their solution would be welcome.

Clara R.—, aged fourteen and a half, had suffered with no children's complaint and had normal hearing up to the age of nine, when she began to suffer from headache, and a bilateral, gradually progressive deafness was noticed. There was nothing relevant to this condition in her family history. The treatment then consisted in adenotomy, faradisation, and politzerisation. At the age of eleven she had some corneal inflammation on the left side, and was under the care of an oculist, who put her on a course of iodides. The deafness varied greatly from time to time, being much worse during her periods, after a hot bath, or in bad weather. Tinnitus had accompanied the deafness from its onset on both sides, and with this occurrence attacks of giddiness and occasional vomiting, though she had remissions from these symptoms as long as a week at a time.

She was a well-nourished child. There was a cloudy spot on the left cornea, the result of a past parenchymatous keratitis. Wassermann reaction negative. Tympanic membranes normal on both sides. Conversation, right at one metre; left *ad coucham*. Whisper not heard at all. Rinne negative; marked shortening of the air- and bone-conduction. Lower tone-limit slightly and the upper tone-limit very greatly reduced. At times a slight rotatory nystagmus to either side could be detected, but usually no spontaneous nystagmus was present. With the eyes closed it was impossible for her to stand on one leg, though this was fairly easy with the eyes open. Caloric response present. A current of 9 ma., with the cathode on the ear, evoked an obvious nystagmus both sides. No nystagmus or giddiness resulted from even thirty rotations. Well-marked nystagmus to either side followed compression of the air in the meatus. Except that the corneal and throat reflexes were weak, nothing else relevant to her condition was noted in the remainder of her examination. There were no hysterical stigmata.

For about a month the condition remained almost unchanged, the patient was repeatedly examined, and the phenomenon of nystagmus, evoked by compression of the air in the meatus, with an intact tympanic membrane, could "very often" be demonstrated. The possibility that the end-piece of the instrument was not "air-tight" in the meatus and that the nystagmus might have been produced by other agencies was quite excluded.

According to the history it would appear to be explainable as a late form of hereditary lues, to which also the keratitis was due. The functional tests showed that the case was one in which the perceptive apparatus was affected both as regards the labyrinth and the cochlea, to which the negative Rinne is not contradictory, as one can constantly note in advanced affections of this character that a similar response to this test obtains, and is to be referred to the fact that under such circumstances the air-conduction is more rapidly involved than the bone-conduction. However, the marked lowering of the upper tone-limit remains as a characteristic symptom of disease affecting the inner ear.

Further observations on other cases affording this extraordinary syndrome must be awaited, says the author, before it is possible to arrive at a complete solution of this peculiar condition; meanwhile he would call attention to the fact that some two years previously he had noted that some patients during Gellé's test suffered from giddiness and nystagmus (Alexander and Lassalle, *Wiener klin. Rundschau*, 1908, Nos. 1-2). He had since met a similar condition in another case of hereditary lues, and Bárány had also shown a patient presenting a condition of a like nature at the February meeting of the Austrian Otological Society.

Alex. R. Tweedie.

Smith, S. MacCuen (Philadelphia).—*A Note on Brain Abscess Formations, with Report of Cases.* "Laryngoscope," August, 1910, p. 804.

Three cases reported.

CASE 1.—Child aged seven. Chronic suppuration left ear. Dull and backward in intelligence. Loss of memory. Radical mastoid operation showed fistula in tegmen antri from which pus was oozing. Probe entered abscess cavity in temporo-sphenoidal lobe. Drainage-tube inserted. Two weeks later, headache, vomiting, convulsions, spasmodic twitching of right side of face, and "right lateral nystagmus." Temperature rose to 101° F. and then fell to normal.

Second Operation.—Exploring behind the old brain abscess revealed another abscess, which was opened and drained, but condition of patient remained unrelieved.

Four weeks later, third operation disclosed a third brain abscess in front of original one.

Patient treated with auto-vaccine (*Staphylococcus aureus*). Recovery.

Neither temperature nor pulse was subnormal throughout, and focal symptoms were entirely absent in spite of the extent of disease.

CASE 2.—Unsuspected abscess in temporo-sphenoidal lobe discovered while radical mastoid was being performed. Opened and drained through fistulous opening in tegmen antri. Recovery.

CASE 3 was one of acute suppuration of the right ear in which two temporo-sphenoidal abscesses were discovered *post-mortem*.

In the two cases in which satellite abscesses were present there was no sinus discovered connecting the abscesses.

Dan McKenzie.

REVIEW.

Traité des maladies de l'Esophage (Treatise on Diseases of the Esophagus).

By Dr. GUISEZ, formerly *chef de clinique* in the Oto-rhino-laryngological Departments of the hospitals of Paris. Paris: Baillière et fils, 1910.

The many and important articles from the pen of Dr. Guisez, which

we have reproduced either in full or in abstract in connection with the modern study of diseases of the œsophagus, as under the guidance of the œsophagoscope, will prepare our readers for the issue of a treatise on the subject by this author, and in this volume of 316 pages, with 139 illustrations, we have a book in which diseases of the œsophagus are presented before us in a scientific fashion in the light of the data afforded by direct inspection of the lesions. Those who have had any long professional experience will, in the light of this, look back upon cases in which they have been in doubt, difficulty, and possibly unavoidable error. A certain proportion—if not a very enormous one—of cases assumed to be œsophageal cancer are now found to be of a different nature, such as spasm, spontaneous cicatricial stenosis or tuberculosis, for which the œsophagoscope supplies means of diagnosis as well as treatment.

While recognising the value of Brüning's method of illumination, and having himself been the inventor of a triple lamp illuminator, Dr. Guisez recommends most strongly and uses himself constantly Clar's combined forehead mirror and lamp, and he finds the illumination more satisfactorily carried out with a small funnel attached to the external orifice of the œsophagoscopic tube. The œsophagoscopic anatomy of the gullet occupies a short but extremely interesting chapter, in which are explained many of the features which are apt to startle the tyro in œsophagoscopy. The study of the illustrations to this is by itself a valuable piece of work. The method of anaesthetising the parts is fully described, and excellent pictures are given to show the postures and the methods of introduction of the tubes, the faulty methods being explained by means of some excellent diagrams. The normal and pathological appearances found in the œsophagus by means of instruments are illustrated by œsophagoscopic views which form a perfect atlas of the subject. While the œsophagoscopic appearances are dwelt on most particularly, the other clinical signs and symptoms are described with the utmost fulness. The various diseases are grouped under important headings, viz. those producing stenosis, those which are really general diseases manifesting themselves in the œsophagus, those of nervous origin (including spasm or œsophagism and paralyses), dilatations of the œsophagus, varicosities, wounds, foreign bodies, congenital anomalies and peri-œsophageal diseases. A final chapter of the utmost interest contains the general statistics of cases of œsophagoscopy, amounting in number to 830. Out of these, 580 were cancers, only 52 cicatricial; tuberculosis was the cause of œsophageal disease in 6 cases, syphilis in only 1, diverticulum 14 times; foreign bodies were found in 49 cases, but in 42 other cases examined by means of the œsophagoscope, in which foreign bodies were supposed to be present, none such were to be found, and were, therefore, either imaginary or had altered their situation subsequent to X-ray examination. In only 6 out of 830 cases was stenosis due to an aneurysm of the thoracic aorta.

To those who read French this book will constitute a mine of information and a rich source of assistance in the acquisition of a knowledge of diseases of the œsophagus from the œsophagoscopic point of view. The descriptions are obviously drawn from nature, and as such will appeal to those who apply on the living body the instructions given in this treatise.

D. G.

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